PROVO RIVER
WATER USERS
ASSOCIATION

June 21, 2018

Kent Jones, P. E.
Utah State Engineer
1594 West Temple
P.O. Box 146300
Salt Lake City, Utah 84114

Subject: Import and Return Flow Quantification in Utah Lake

Dear Kent:

Provo River Water Users Association (Association) received the May 10, 2018 letter from your office regarding quantification of return flows accumulated in Utah Lake from Provo River Project (Project) import water sources. The purpose of this letter is to address the State Engineer's proposed changes to the Association's quantification method and to provide data and support for the areas in which we disagree. Table 1 below shows Project return flows since 2012 calculated using the Association's proposed method compared with the State Engineer's proposed modifications to this method. Spreadsheets showing the Association's proposed method and the State Engineers modifications for the years listed are attached.

Table 1
Provo River Project Return Flows Based on
Provo River Water Users Association and State Engineer Methods

	Association	State Engineer	Difference	Percent
2012	12,515	9,903	2,612	79%
2013	5,847	5,011	836	86%
2014	8,323	6,806	1,517	82%
2015	13,158	9,976	3,182	76%
2016	9,911	7,848	2,063	79%
2017	6,728	5685	1,043	85%
Total	56,482	45,229	11,253	80%

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The State Engineer's proposed changes to the quantification method significantly affects the quantity of Project return flows the Association may claim. In the sections that follow, a response is provided to each section of the State Engineer's letter regarding proposed changes to the Association's method.

Irrigation Return Flows
The Association agrees that irrigation return flows should be credited at 35 percent. This value has been used for many years by the State Engineer and absent any data or study indicating otherwise, the Association believes it accurately reflects return flows to the system.

Municipal Return Flows
The Association proposed using 90 percent for return flows from indoor municipal usage while the State Engineer's letter proposed using 80 percent. The literature was investigated to determine the appropriate value to use for return flows from domestic indoor uses. In the publication, "Water Use, Chapter 11 of National Handbook of Recommended Methods for Water Data Acquisition" by William E. Templin, Richard A. Herbert, Claire B. Stainaker, Marilee Horn, and Wayne B. Solley, 1993, it states:

> *In California, studies of statewide domestic water use (California Department of Water Resources, 1983, p. 9) indicate that about the same quantities of water are used inside and outside of dwellings. Usually more than half of the outside landscape irrigation water evaporates or is transpired by trees and plants. Conversely, only about 2 percent of the water used inside evaporates. The remainder of the inside water use is discharged to the sewer and becomes available for reuse.*

It is normally assumed that almost all of the metered water use inside a building is converted to wastewater discharged from the building because very little of the water used is consumed. This assumption is supported by the following publications.

Linaweaver and Wolfe (1963) state that, "In the absence of more accurate data it is suggested that approximately 6 percent of the water supplied for indoor use is not returned into the domestic sanitary sewer system."

Table 2 in Chapter 11 of the National Handbook of Recommended Methods for Water Data Acquisition (USGS-19), shown below, indicates that domestic consumptive use amounted to about 2-3 percent of total indoor average annual use.

Based upon the above cited sources, the water supplied for indoor use that is discharged as wastewater and thus available as return flow ranges from 94-98 percent. It appears that the 90 percent return flow value assumed by the Association for domestic use is conservatively low, and the lower value of 80 percent domestic return flow proposed by the State Engineer does not find support in the literature.

Table 2. Breakdown of domestic consumptive use pre-1980 and post 1980 fixture implementation
[gal/day, gallons per day per person]

Activity	Pre-1980 Fixtures			Post-1980 Fixtures		
	water use	Consumptive use		water use	Consumptive use	
	(gal/day)	(gal/day)	(percent)	(gal/day)	(gal/day)	(percent)
Flushing	20	0	0	14	0	0
Bathing	28	0.5	2	19	0.4	2
Clothes washing	14	1.0	7	14	1.0	7
Dish washing	3	0	0	3	0	0
Other (cooking, cleaning)	10	0.5	5	8	0.4	5
Leaks	8	0	0	8	0	0
Total indoor use	83	2	2	66	1.8	3
Summer outdoor use	28	18	64	28	18	64
Peak summer use	111	20	18	94	19.8	21
Average annual use[1]	97	11	11	80	10.8	14

[1]Average annual use is calculated in the following manner:

$$PCU(a) = (PCU(o) + PCU(i)) + 2(1/2PCU(o) + PCU(i)) + PCU(i)$$

where PCU(a) is the average annual use;
PCU(o) is the outdoor per capita use, and
PCU(i) is the indoor per capita use.

Mixed Use Return Flows

Several communities along the Wasatch Front were examined as part of a study performed for the Utah Division of Water Resources to determine an accurate estimate of municipal and industrial return flows. Actual production records were analyzed, and flows delivered in the winter months were assumed to be reflective of indoor usage throughout the year. Table 3 shows data for seven communities within the Great Salt Lake watershed; Logan, Clearfield, Layton, Salt Lake City, Sandy, Orem, and Provo. As can be seen from this analysis which used 90 percent for indoor return flows, Orem has a composite return flow value of 58.9 percent and Provo has a value of 65 percent. The State Engineer's letter called for a mixed-use value of 50 percent for both cities which represents a 15 percent decrease to the Association in allowable return flows from Orem, and a 23 percent decrease in return flows from Provo. It would be helpful to the Association to be able to view the State Engineer's data to understand the differences in our analyses.

Table 3
Municipal and Industrial Water Return Flows
Typical Utah Communities within the Great Salt Lake Drainage

Community	Indoor Use (%)	Outdoor Use (%)	Indoor Return Flows (90%)	Outdoor Return Flows (35%)	Composite Return Flow (%)
Sandy	36.4	63.6	32.8	22.3	55.0
Provo	54.6	45.4	49.1	15.9	65.0
Orem	43.5	56.5	39.2	19.8	58.9
Salt Lake City	54.4	45.6	49.0	16.0	64.9
Layton	43.8	56.2	39.4	19.7	59.1
Clearfield	48.9	51.1	44.0	17.9	61.9
Logan	67.0	33.0	60.3	11.6	71.9
				Average	**62.4**

Geographic Differences in Return Flows to Utah Lake

The State Engineer's letter proposes a "geographic coefficient" based on two criteria: timing of irrigation return flows to the Jordan River, and proximity of irrigation works and irrigated land to Utah Lake. These two issues were combined into a "geographic coefficient" to be applied to return flows from different areas of the Utah Lake watershed. In the following sections the effect of these two issues is examined.

Timing of Irrigation Return Flows

It appears that the State Engineer's basic assumption is that irrigation return flows to Utah Lake or the Jordan River occur uniformly throughout the year. The State Engineer assumes that return flows to the Jordan River that occur during the non-irrigation season would not offset irrigation deliveries from Utah Lake downstream and thus could not be counted as return flows to Utah Lake. The Association has examined river gauge data in the Jordan River at the Jordan Narrows which shows that during the winter months (November – March) there is very little flow in the Jordan River. Table 4 below shows the average winter flow was 4,452 acre-feet in the river for the 2013-2017 water years. The winter period of November 1 through March 31 was chosen because it begins two weeks after the irrigation season ends, and it ends two weeks prior to irrigation season starting. This is significant because due to irrigation deliveries, the river flow closer to the beginning and ending of irrigation season is not reflective of the long-term winter averages.

Table 4
Jordan River Flow at Narrows (Nov 1-March 31)

Year	Jordan River Total Flow (Ac-ft)
2012	4538
2013	4793
2014	4155
2015	4356
2016	4745
2017	4123
Average	4452

As an example of the effect of the State Engineer's "geographic coefficient", return flows calculated from Jacob Canal deliveries in 2017 would be reduced from 12,228 acre-feet as calculated using the Association's method, to 7,336 acre-feet calculated using the State Engineer's method. This reduction of 4,892 acre-feet is more than the total flow in the Jordan River for the November to March period. Surely there are return flows from sources other than the Jacob Canal between Utah Lake and the Jordan Narrows. The Association believes that the effect of the "geographic coefficient" is significantly overestimated.

The Association examined the literature on this subject. Page 47, second paragraph, "Ground Water Seepage to the Jordan River" of the report "Hydrology of Northern Utah Valley, Utah 1975-2005, USGS" states the following:

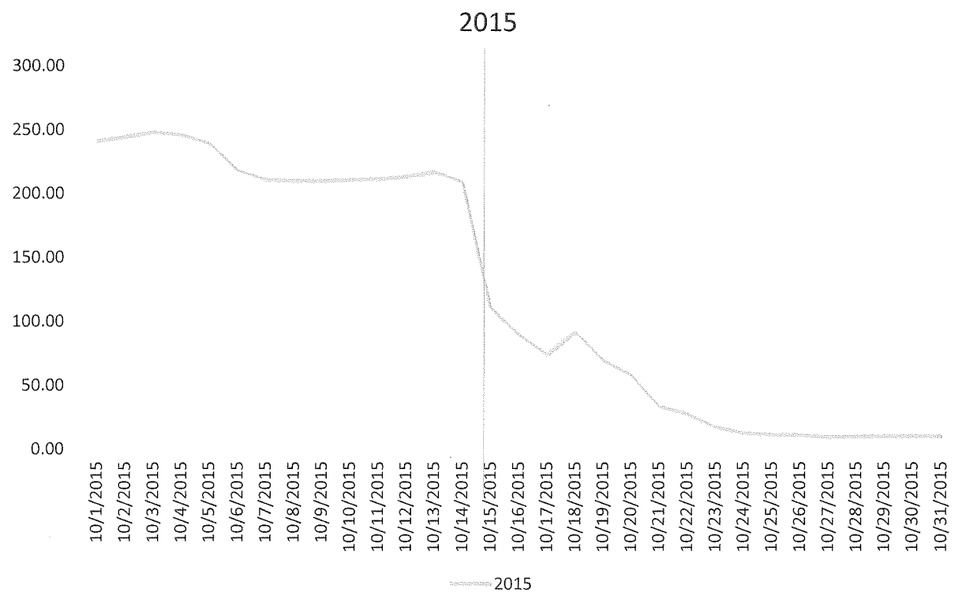
> *Ground-water seepage to the Jordan River between Utah Lake and the Jordan Narrows has been estimated to be 7,000 acre-ft/yr (Cordova and Subitzky, 1965, p. 22). Clark and Appel (1985, p. 79) estimated that 50 to 80 percent (3,500 to 5,600 acre-ft/yr) of the ground-water seepage was from upward leakage from the principal confined basin-fill aquifer with the remainder occurring as seepage from the shallow unconfined LB aquifer.*

This would lead to the conclusion that the shallow aquifer contributes somewhere between 1,400 and 3,500 acre-feet over the entire year, much less than what the State Engineer's "geographic coefficient" would suggest.

The Association also examined how the flows in the Jordan River change at the end of the irrigation season, or how long it takes for flows in the river to stabilize to a constant amount, which is an indication of the effects of irrigation return flows. Figure 1 shows

the flow at the Narrows gauge from October 1 to October 31, 2015. The flow in the river rapidly diminishes after irrigation deliveries end approximately October 15, and ten days later the flow is constant at less than 10 cubic feet per second. The Association has examined several years' data and the flow diminishes in a similar fashion each year. The Association believes that the assumption that significant return flows occur year-round is inaccurate. The return flows from Project irrigation deliveries are either surface flows or flows that are contained within the shallow aquifer. It is the Association's strong belief that these flows do not take six months to reach the Jordan River or Utah Lake.

Figure 1
Jordan River Flows at the Narrows-October 2015



Proximity to Utah Lake

The State Engineer's "geographic coefficient" also takes into account the proximity of the conveyance works and irrigated land to Utah Lake. The Association believes that if the return flows make it to the lake it does not matter how far away the conveyance works or irrigated land is from the lake. As an example, the Association does not understand the "geographic coefficient" being used for Highland and Alpine Cities. Each of these areas drain to Dry Creek which ultimately drains to Utah Lake. In addition, the general groundwater flow from these areas is along the Dry Creek drainage (Hydrology of Northern Utah Valley, Utah 1975-2005, USGS).

Flows delivered to the Jacob Canal would be reduced by 40 percent based on the "geographic coefficient", as mentioned above. Project import water delivered through the Jacob Canal is diverted from the Provo River Aqueduct at the Jordan Narrows, but the water is generally delivered to lands very close to the Jordan River and/or Utah Lake. Much of the water is delivered to lands within Saratoga Springs adjacent to the lake. The Association believes that an arbitrary coefficient based on diversion location does not accurately reflect the location where the water is used or how the return flows from those deliveries behave.

Evaporation from Utah Lake

The Association agrees with the State Engineer regarding the accepted method for accounting for evaporation in Utah Lake.

Summary

The Association disagrees with some of the State Engineer's proposed changes to the Utah Lake return flow quantification method as outlined in the May 10, 2018 letter (copy attached). The State Engineer's proposed changes to the Association's return flow quantification method do not conform with the relevant literature regarding domestic use return flow percentage, uses an arbitrary "geographic coefficient" that overstates winter return flows to the Jordan River and appears to ignore where water is actually used as compared to where it is diverted. In addition, the State Engineer's mixed-use return flow values for certain cities in the Utah Lake basin don't align with those cities' own water use data.

Association staff would greatly appreciate the opportunity to meet with you and your staff to discuss Utah Lake return flows and this letter at your earliest convenience. You may reach me at 801.372.2866 or Jeff Budge at 801.372.2867 or either of us at 801.796.8770.

Thank you for the good work you and your staff do.

Sincerely,
PROVO RIVER WATER USERS ASSOCIATION

G. Keith Denos, P.E.
General Manager

GKD/MC

Copies: John Larsen, Jordan River and Utah Lake Commissioner
Gene Shawcroft, Central Utah Water Conservancy District

Return Flow Summary
Provo River Water Users Association
Return Flows to Utah Lake
Association Proposed Method

Year	Return Flow Available (Previous Year Total WY End Return Flow Available)	Return Flow Exchanged	Return Flow Remaining at End of water Year	Current Year Return Flow	Total WY End Return Flow Available After Incremental Evaporation
2012	-	0	0	12,515	12,515
2013	12,515	10,000	2,515	5,847	8,361
2014	8,361	9,000	(639)	8,323	7,684
2015	7,684	10,000	(2,316)	13,158	10,842
2016	10,842	0	10,842	9,911	20,753
2017	20,753	0	20,753	6,728	27,481

Return Flow Available	Equal to the prior year return flow carryover (Column H)
Return Flow Usage	Either the requested volume of May 1 election or Provo River System storage water available for exchange
Return Flow Remaining	RF available less Usage
Current Year Return Flow	Annual Return flow as calculated in the preceeding Spreadsheets for each year.
Total WY End Return Flow Available	The volume of Return Flow water Avilable in Utah Lake for use the following year (Column C)

2012 Water Year

Association Proposed Method

Delivery Values

Month	EOM Elevation (feet below compromise)	EOM Surface area w/ PRP Water (acres)	EOM Surface area w/o PRP Water (acres)	Incremental Increase in Surface Area (acres)	square inches	Incremental Evaporation Coeffecient (inches)	Incremental Evaporation (acre-feet)	Potable Deliveries (90%) (acre-feet)	M&I Deliveries (60.8%) (acre-feet)	Irrigation (35%) (acre-feet)	Total Return Flow (acre-feet)	Return Flow Less Incremental Evaporation (acre-ft)	With 16% Evaporation	Previous Month Total Surface Area (acres)	Previous Month Total Volume (acre-ft)	Previous Month Total Volume w/o PRP Water (acre-ft)	Total Surface Area of Previous Month Water w/o PRP Water (acres)	Net Area of PRP Water (acres)	Evaporation for Double Counted Area (acre-ft)	Cumulative Return Flow Volume in Utah Lake (acre-ft)
November	-0.2	93,742	93,742	-	-	2.8	-	-			-	-	-							
December	0.12	94,654	94,654	-	-	1.14	-	-			-	-	-							
January	0.46	95,644	95,644	-	-	0.77	-	-			-	-	-							
February	0.31	95,205	95,205	-	-	0.72	-	-			-	-	-							
March	0.32	95,234	95,234	-	-	0.85	-	-			-	-	-							
April	0.18	94,828	94,821	7	41,376,951	1.47	0.81	103.14		116.76	219.90	219.09	184.72							**219.09**
May	-0.3	93,460	93,400	60	373,515,984	2.88	14.29		571.03	1,957.10	2,528.13	2,513.84	2,123.63	93,460	837,688	837,469	93,327	133	32	**2,700.94**
June	-1	91,534	91,488	46	289,795,420	4.03	15.52		399.33	1,567.27	1,966.60	1,951.08	1,651.94	91,534	773,032	770,331	91,334	201	67	**4,584.62**
July	-1.9	89,181	89,093	88	552,362,209	6.92	50.78		1,039.49	2,170.17	3,209.66	3,158.88	2,696.11	89,181	691,825	687,241	88,937	244	141	**7,602.73**
August	-2.58	87,496	87,445	51	322,142,307	9.33	39.93		557.48	1,841.98	2,399.46	2,359.53	2,015.55	87,496	634,459	626,856	87,250	246	191	**9,771.10**
September	-3.05	86,375	86,303	73	454,766,400	8.3	50.15		597.60	2,008.60	2,606.21	2,556.06	2,189.21	86,375	591,034	581,263	85,885	489	338	**11,988.86**
October	-3	86,495	86,491	4	27,219,632	5.19	1.88		597.60	161.12	758.73	756.85	637.33	86,495	595,344	583,355	85,961	535	231	**12,514.50**
								103.14	3,762.54	9,823.01	13,688.68	**13,515.34**	11,498.49						1,001	

Difference Between Old and New Method

Increase 2,016.84

1 acre = 6,272,640 square inches

1 cubic inch = 1.33E-08 acre-feet

Return Flow Estimates-Imported Water From Duchesne and Weber Basins
Provo River Water Users
Water Year 2012
Association Proposed Method

Shareholder	Nov A	Nov B	Dec A	Dec B	Jan A	Jan B	Feb A	Feb B	Mar A	Mar B	Apr A See note 3	Apr B	May A	May B	June A	June B	July A	July B	Aug A	Aug B	Sep A	Sep B	Oct A	Oct B	Totals	Potable	Potable (90%)	General M&I Deliveries	General M&I Deliveries (60.8%)	Irrigation	Irrigation (35%)	Total Return Flows
Provo City	0	0	0	0	0	0	0	0	0	0	87.2	10.7	14.2	8.1	12.1	14.2	16.5	66.2	20.5	21.3	0	16.9	7.8	9	304.7	98	88	207	126		-	214
North Fork SSD-Hamblin Exchange	0	0	0	0	0	0	0	0	0	0	4.4	8.7	9.2	3.1	6.1	7.4	6.5	7.2	7.5	8.3	5.9	11.9	4.8	6								
Redford-Hamblin Exchange	0	0	0	0	0	0	0	0	0	0	1.6	2	5	5	6	7	10	11	13	13	5	5	3	3								
Orem City																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	89.6	156	165.6	729	393	211	365	1086.2	0	0	0	0	0	0	3195.4	90	81	1,451	882		-	963
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	141.08	425.1	0	0	312.1	0	0	878.28		-				-	-
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	408.2	95.1	0	631.7	482	1617		-				-	-
Dixon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	531	0	0	0	531		-				-	-
JVWCD Jacob Canal																									0		-			5,286	1,850	1,850
Highland City - Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	0	0	172.04	0	0	0	0	0	0	243.04		-			243	85	85
Highland City HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	320	225	46	177.35	430	486	449.35	303.35	0	2437.05		-			2,437	853	853
Pleasant Grove City																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	154	236.9	136.9	0	0	527.8		-			528	185	185
MWD & Irr.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58.6	30	0	50	60	60	55	60	0	0	373.6		-			374	131	131
Irrigation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	0	32	51.9	30	0	0	0	0	193.9		-			194	68	68
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2		-			2	1	1
Lindon City																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Lindon City	0	0	0	0	0	0	0	0	0	0	52	36	105	36	0	30	0	0	0	0	0	0	8	0	267		-			267	93	93
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Provo Res. Co. - Alpine District	0	0	0	0	0	0	0	0	0	0	0	0	0	165	25.8	425.1	499.85	570.9	6.15	236.984	220.56	145.9	0	0	2296.244		-			2,296	804	804
Lehi City																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.1	187	27.75	29.6	207.89	140.69	95.8	126.76	0	0	821.59		-			822	288	288
Lehi City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105.5	100.5	0	98.4	69.2	0	147	0	520.6		-			521	182	182
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.9	0	64	64	0	64	190.2	203.8	0	0	593.9		-			594	208	208
Lehi Irrigation																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	16		-			16	6	6
American Fork City																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	73.25	0	0	0	0	73.45		-			73	26	26
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28.9	124.4	106.55	405	226.7	0	0	131.5	0	0	1023.05		-			1,023	358	358
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	240.1	0	177.8	264.4	258.5	0	0	940.8		-			941	329	329
Highland Con. Dist Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	120.3	103.2	181.5	296.7	105.9	98.4	0	0	0	0	906		-			906	317	317
MWD of SL & S Penstock	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1438.9	1420.7	1463.9	1503.6	1389.8	1473.4	1318.9	1289.2	0	0	11298.4		-			11,298	3,954	3,954
																									29,061	**188**	**168.8**	**1,658**	**1,008**	**27,820**	**9,737**	**10,914**

Notes:
1. M&I flows estimate as indoor usage from Nov thru April
2. Summer usage from May thru October based on recent State of Utah study showing combined return flows of 60.8%
3. Utah Lake stopped spilling on April 9. Use 6/15ths of April A values from the river commissioner report.

Return Flow Percentage 2012 **38%**

Return Flow Estimates-Imported Water From Duchesne and Weber Basins
Provo River Water Users
Water Year 2013
Association Proposed Method

Shareholder	Nov A	Nov B	Dec A	Dec B	Jan A	Jan B	Feb A	Feb B	Mar A	Mar B	Apr A	Apr B	May A	May B	June A	June B	July A	July B	Aug A	Aug B	Sep A	Sep B	Oct A	Oct B	Totals	Potable	Potable (90%)	General M&I Deliveries	General M&I Deliveries (60.8%)	Irrigation	Irrigation (35%)	Total Return Flows
Provo City	115	208	188	181	204	224	221	176	201	215	202	47	0	0	0	22.5	22.3	22.9	20.8	22	7.1	9.5	10.3	227	2546.4	2,182	1,964	364	222		-	2,185
North Fork SSD-Hamblin Exchange	8	8	6	7	7	8	9	6	6	6	7	4.5	8.4	13	6.9	10.5	9.3	8.9	11.8	12	3	6.2	6.3	8								
Redford-Hamblin Exchange	2	3	2	3	3	3	3	3	2	4	2	1	6	8	11	12	13	14	9	10	4	3	4	3								
Orem City																											-				-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-		-	-
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	519.9	0	0	0	0	0	0	0	0	0	0	0	519.9		-				-	-
MWD	0	0	0	0	377	394	390	321	363	328	135	432	0	0	0	0	0	0	0	0	0	0	0	0	2740		-				-	-
Dixon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-				-	-
JVWCD Jacob Canal																									0		-			1	0	0
Highland City - Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Highland City HCD	0	0	0	0	0	0	0	0	0	0	0	26	46	0	16.9	246	211	268.5	265.8	83.8	156	67.2	0	0	1387.2		-			1,387	486	486
Pleasant Grove City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
MWD & Irr.	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	8		-			8	3	3
Irrigation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Lindon City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Lindon City	0	0	0	0	0	0	0	0	0	0	0	106	0	0	0	0	0	0	0	0	0	0	0	0	106		-			106	37	37
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Provo Res. Co. - Alpine District	0	0	0	0	0	0	0	0	0	0	0	0	7.8	0	42.9	238.6	0	0	68.7	26.6	6.7	15.9	5.1	0	412.3		-			412	144	144
Lehi City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81	80	38.9	0	0	63	18.1	0	0	281		-			281	98	98
Lehi City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56.8	82.2	0	139		-			139	49	49
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	125	8.6	104.4	0	62.9	39.3	0	0	340.2		-			340	119	119
Lehi Irrigation																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	2.2	0	0	0	0	0	0	0	0	0	0	0	2.2		-			2	1	1
American Fork City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	3.6	0	0	0	0	0	0	0	27.6		-			28	10	10
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46.2	54.4	29.2	29.4	0	0	159.2		-			159	56	56
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47.1	166.5	61.6	0	0	0	3.7	0	278.9		-			279	98	98
Highland Con. Dist Other	0	0	0	0	0	0	0	0	0	0	0	0	19.3	0	28.8	0	51.4	114.8	78.4	64	20.2	0	0	0	376.9		-			377	132	132
MWD of SL & S Penstock	0	0	0	0	0	0	0	0	0	0	1.6	475.1	1327.9	1266.5	0	0	0	0	0	0	0	0	0	0	3071.1		-			3,071	1,075	1,075
																									12,396	**2,182**	**1,964**	**364**	**222**	**6,591**	**2,307**	**4,492**

Notes:
1. M&I flows estimate as indoor usage from Nov thru April
2. Summer usage from May thru October based on recent State of Utah study showing combined return flows of 60.8%

Return Flow Percentage 2013 **36%**

2013 Water Year
Association Proposed Method

Month	EOM Elevation (feet below compromise)	EOM Surface area w/ PRP Water (acres)	EOM Surface area w/o PRP Water (acres)	Incremental Increase in Surface Area (acres)	square inches	Incremental Evaporation Coeffecient (inches)	Incremental Evaporation (acre-feet)	Potable Deliveries (90%) (acre-feet)	M&I Deliveries (60.8%) (acre-feet)	Irrigation (35%) (acre-feet)	Total Return Flow (acre-feet)	Total Return Flow Less Incremental Evaporation	With 16% Evaporation	Previous Month Total Surface Area (acres)	Previous Month Total Volume (acre-ft)	Previous Month Total Volume w/o PRP Water (acre-ft)	Surface Area of Previous Month Water w/o PRP Water (acres)	Net Area of PRP Water (acres)	Evaporation for Double Counted Area (acre-ft)	Cumulative Return Flow Volume in Utah Lake (acre-ft)
November	-2.55	87,568	87,560	8	50,037,680	2.8	1.86	309.60			309.60	307.74	260.06							12,822.24
December	-2.18	88,477	88,468	9	57,248,124	1.14	0.87	348.30			348.30	347.43	292.57	88,477	669,638	656,816	88,081	396	38	**13,132.00**
January	-1.84	89,334	89,323	11	70,499,873	0.77	0.72	1,098.00			1,098.00	1,097.28	922.32	89,334	700,742	687,610	88,948	386	25	**14,204.51**
February	-1.46	90,314	90,304	10	64,592,066	0.72	0.62	1,016.10			1,016.10	1,015.48	853.52	90,314	732,167	717,962	89,813	501	30	**15,189.94**
March	-1.05	91,400	91,389	11	71,497,651	0.85	0.81	1,012.50			1,012.50	1,011.69	850.50	91,400	768,468	753,278	90,836	564	40	**16,161.70**
April	-1.15	91,132	91,119	13	81,287,956	1.47	1.59	747.45		215.85	963.30	961.71	809.17	91,132	759,352	743,191	90,542	590	72	**17,051.11**
May	-1.3	90,735	90,707	28	173,680,374	2.88	6.65		337.62	934.40	1,272.02	1,265.37	1,068.49	90,735	745,728	728,676	90,122	613	147	**18,169.37**
June	-2.08	88,728	88,720	8	47,556,910	4.03	2.55		38.24	237.37	275.61	273.07	231.52	88,728	678,495	660,326	88,179	549	184	**18,258.10**
July	-2.68	87,255	87,243	12	72,164,134	6.92	6.63		54.96	390.39	445.35	438.72	374.10	87,255	625,726	607,468	86,720	535	309	**8,388.07**
August	-3.5	84,979	84,967	12	72,319,849	9.33	8.96		52.04	298.87	350.91	341.95	294.76	84,979	552,537	544,149	84,529	450	350	**8,379.93**
September	-3.92	83,658	83,650	8	49,115,955	8.3	5.42		19.94	197.65	217.59	212.17	182.77	83,658	518,851	510,471	83,260	398	276	**8,316.59**
October	-3.74	84,227	84,220	7	42,940,599	5.19	2.96		157.23	31.85	189.08	186.12	158.83	84,227	535,628	527,311	83,899	327	142	**8,361.11**
								4,531.95	660.04	2,306.36	7,498.35	**7,458.73**	6,298.62					1,612	5,701.62

Difference Between Old and New Method

Increase 1,160.11

1 acre = 6,272,640 square inches

1 cubic inch = 1.33E-08 acre-feet

Return Flow Estimates-Imported Water From Duchesne and Weber Basins
Provo River Water Users
Water Year 2014
Association Proposed Method

Shareholder	Nov A	Nov B	Dec A	Dec B	Jan A	Jan B	Feb A	Feb B	Mar A	Mar B	Apr A	Apr B	May A	May B	June A	June B	July A	July B	Aug A	Aug B	Sep A	Sep B	Oct A	Oct B	Totals	Potable	Potable (90%)	General M&I Deliveries	General M&I Deliveries (60.8%)	Irrigation	Irrigation (35%)	Total Return Flows
Provo City	195	206	194	211	200	214	174	150	173	207	271	62.34	12.38	143.5	36.85	110.14	34.28	23.64	9.13	14.45	10	12.7	10.5	229	2903.91	2,257	2,032	647	393		-	2,425
North Fork SSD-Hamblin Exchange	8	9	8	8	8	8	9	8	8	9	7.3	9	8.4	8.5	3.9	5.2	11.28	11.6	4.1	4.5	4.1	8.7	5.5	8	183.08							
Redford-Hamblin Exchange	1	2	2	4	1	2	3	2	2	3	2	2	4	4	8	10	12	12	5	5	6	4	5	3	104							
Orem City																																
Provo Res. Co.	6	0	0	0	303	280	223	285	339	231	249	0	0	0	0	0	225	225	524.8	244.99	429.8	306.45	284.8	212	4368.84	1,910	1,719	2,453	1,491		-	3,210
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-				-	-
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-				-	-
Dixon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-				-	-
JVWCD Jacob Canal														246.86	78.8																-	-
Highland City - Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	338.91	113.8	7.1	146	195.6	0	0	0	325.66		-			326	114	114
Highland City HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	801.41		-			801	280	280
Pleasant Grove City																85	0	320	107.85	9.77	0	245.22	110.17	0	878.01		-			878	307	307
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	0	0	0	0	0	0	6	81		-			-	-	-
MWD & Irr.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			81	28	28
Irrigation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0	0	0	30	0	0	48		-			48	17	17
Lindon City																					31	0	0	0	31		-			31	11	11
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3		-			3	1	1
Lindon City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	50	105	0	0	0	0	0	171		-			171	60	60
Provo Res. Co. - Alpine District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	35	102.15	164	8.8	5.2	0	0	19.42	1.9	367.47		-			367	129	129
Lehi City																	20.73	80.2	45.4	19	30	43.02	33.7	8.8	280.85		-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28.7	80.4	75.9	80	50	0	0	0	315		-			281	98	98
Lehi City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33.7	116.5	102.4	91.9	101.3	48.8	62	0	556.6		-			315	110	110
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			557	195	195
Lehi Irrigation																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
American Fork City																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42.7	0	0	0	0	0	0	0	42.7		-			43	15	15
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98.9	143.8	76.8	0	0	0	0	0	319.5		-			320	112	112
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14.9	94	73.7	62.6	0	0	245.2		-			245	86	86
Highland Con. Dist Other	0	0	0	0	0	0	0	0	0	0	0	0	25.7	80.7	7.9	80.7	130.9	105.4	100.7	111.8	163.9	63.6	3.2	0	874.5		-			875	306	306
MWD of SL & S Penstock	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	954.5	1375.5	1247.3	1218	1451.5	0	6246.8		-			6,247	2,186	2,186
																									19,148	**4,167**	**3,751**	**3,099**	**1,884**	**11,588**	**4,056**	**9,691**

Notes:
1. M&I flows estimate as indoor usage from Nov thru April
2. Summer usage from May thru October based on recent State of Utah study showing combined return flows of 60.8%

Return Flow Percentage 2014 **51%**

2014 Water Year
Association Proposed Method

Month	EOM Elevation (feet below compromise)**	EOM Surface area w/ PRP Water (acres)	EOM Surface area w/o PRP Water (acres)	Incremental Increase in Surface Area (acres)	square inches	Incremental Evaporation Coeffecient (inches)	Incremental Evaporation (acre-feet)	Potable Deliveries (90%) (acre-feet)	M&I Deliveries (60.8%) (acre-feet)	Irrigation (35%) (acre-feet)	Total Return Flow (acre-feet)	Less Incremental Evaporation	With 16% Evaporation	Previous Month Total Surface Area (acres)	Previous Month Total Volume (acre-ft)	Previous Month Total Volume w/o PRP Water (acre-ft)	Total Surface Area of Previous Month Water w/o PRP Water (acres)	Net Area of PRP Water (acres)	Evaporation for Double Counted Area (acre-ft)	Cumulative Return Flow Volume in Utah Lake (acre-ft)
November	-3.47	85,073	85,060	13	83,117,646	2.8	3.09	384.30			384.30	381.21	322.81							6,082.84
December	-3.2	85,912	85,899	13	81,828,976	1.14	1.24	384.30			384.30	383.06	322.81	85,912	578,129	572,046	85,552	360	34	**6,431.73**
January	-2.77	87,039	87,015	25	153,957,326	0.77	1.57	821.70			821.70	820.13	690.23	87,040	617,017	610,585	86,804	235	15	**7,236.77**
February	-2.32	88,131	88,110	21	131,038,437	0.72	1.25	768.60			768.60	767.35	645.62	88,131	656,398	649,161	87,867	263	16	**7,988.32**
March	-2.09	88,702	88,678	24	151,758,977	0.85	1.71	768.60			768.60	766.89	645.62	88,703	678,494	670,506	88,464	238	17	**8,738.34**
April	-2.15	88,552	88,537	15	93,224,310	1.47	1.82	542.38		5.60	547.98	546.16	460.30	88,552	669,640	660,902	88,195	357	44	**9,240.77**
May	-2.46	87,787	87,781	6	38,036,282	2.88	1.46		109.91	123.64	233.56	232.10	196.19	87,787	643,218	633,978	87,447	341	82	**9,391.11**
June	-3.34	85,478	85,470	8	48,612,960	4.03	2.60		105.85	124.29	230.13	227.53	193.31	85,478	569,564	560,172	85,119	358	120	**9,498.39**
July	-4.09	83,118	83,078	40	253,478,062	6.92	23.30		337.32	746.37	1,083.69	1,060.39	910.30	83,118	502,203	492,704	82,576	542	313	**1,246.14**
August	-4.67	81,250	81,180	69	433,060,222	9.33	53.68		493.68	1,236.00	1,729.67	1,676.00	1,452.93	81,250	453,019	451,773	80,955	295	229	**2,693.16**
September	-4.66	81,282	81,213	69	430,540,965	8.3	47.47		475.30	1,247.66	1,722.96	1,675.49	1,447.29	81,282	453,020	450,327	80,897	386	267	**4,101.95**
October	-4.63	81,380	81,339	41	255,138,670	5.19	17.59		460.74	572.14	1,032.88	1,015.29	867.62	81,380	461,128	457,026	81,166	213	92	**5,024.94**
								3,669.88	1,982.80	4,055.70	9,708.37	**9,551.57**	8,155.03					**1,228**	

**From water report end of month value

Difference Between Old and New Method

Increase 1,396.54

1 acre = 6,272,640 square inches

1 cubic inch = 1.33E-08 acre-feet

Return Flow Estimates-Imported Water From Duchesne and Weber Basins
Provo River Water Users
Water Year 2015
Association Proposed Method

Shareholder	Nov A	Nov B	Dec A	Dec B	Jan A	Jan B	Feb A	Feb B	Mar A	Mar B	Apr A	Apr B	May A	May B	June A	June B	July A	July B	Aug A	Aug B	Sep A	Sep B	Oct A	Oct B	Totals	Potable	Potable (90%)	General M&I Deliveries	General M&I Deliveries (60.8%)	Irrigation	Irrigation (35%)	Total Return Flows
Provo City	199	201	198	211	191	209	194	169	197	212	174	10.12	3	5	4	17	21	22	464.47	329.37	24.75	31.88	15.08	798	3900.67	2,165	1,949	1,736	1,055		-	3,004
Orem City																																
Provo Res. Co.	33	0	0	0	236	139	0	0	0	0	0	0	0	0	0	332	225	0	282.85	0	0	295.85	0	0	1543.7	408	367	1,136	691		-	1,058
Provo Bench	0	0	0	0	0	210	303	0	0	0	0	0	0	0	0	0	0	0	0	404.04	292.85	0	0	0	1209.89		-				-	-
MWD	0	0	0	0	0	0	0	296	328	0	0	0	0	0	0	0	0	85	0	0	0	0	141.7	583	1433.7		-				-	-
Dixon	0	0	0	0	0	0	0	0	0	156	0	67	0	0	0	0	0	0	0	0	0	0	0	0	223		-				-	-
JVWCD Jacob Canal												29.72		177.94		146.09									353.75		-			354	124	124
Highland City - Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	125	0	160	0	112	0	0	0	0	397		-			397	139	139
Highland City HCD	0	0	0	0	0	0	0	0	0	0	0	23.02	0	0	0	0	223	170	201.8	63.84	263.75	133	131.58	0	1209.99		-			1,210	423	423
Pleasant Grove City																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	148	0	0	0	0	0	0	0	0	148		-			148	52	52
Irrigation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	26	112	88	83.8	83.6	85.6	93.62	15.68	0	599.3		-			599	210	210
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Lindon City																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Lindon City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	146	0	0	0	0	0	0	0	0	146		-			146	51	51
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	11.1	0	0	6	0	0	0	0	74	28	4	0	4	127.1		-			127	44	44
Provo Res. Co. - Alpine District	0	0	0	0	0	0	0	0	0	0	0	144.57	0	0	0	65	157	178	0	0	0	0	0	0.1	544.67		-			545	191	191
Lehi City																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	243.6	0	71.3	234.9	16.3	566.1		-			566	198	198
Lehi City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53	0	28	0	0	0	0	0	0	81		-			81	28	28
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	161	228	112.6	77.4	0	177.1	0	0	768.1		-			768	269	269
Lehi Irrigation																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
American Fork City																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78.9	8.1	0	87		-			87	30	30
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	0	0	78.9	170.2	200.7	0	16.2	0	488		-			488	171	171
Highland Con. Dist Other	0	0	0	0	0	0	0	0	0	0	0	32.3	30.3	3.9	15	112	144	222	247.8	180.2	191.2	97.9	5	124.04	1405.64		-			302	106	106
MWD of SL & S Penstock	0	0	0	0	0	0	0	0	0	0	0	614.28	1327.16	1398.86	1210.06	1341.45	1356.08	1441.62	1315.85	1432.12	1338.46	2267.02	2178.00	0	17220.98		-			1,406	492	492
																														17,221	6,027	6,027
																									32,755	**2,573**	**2,316**	**2,871**	**1,746**	**24,445**	**8,556**	**12,617**

Notes:
1. M&I flows estimate as indoor usage from Nov thru April
2. Summer usage from May thru October based on recent State of Utah study showing combined return flows of 60.8%

Return Flow Percentage 2015 **39%**

2015 Water Year
Association Proposed Method

Month	EOM Elevation (feet below compromise)	EOM Surface area w/ PRP Water (acres)	EOM Surface area w/o PRP Water (acres)	Incremental Increase in Surface Area (acres)	square inches	Incremental Evaporation Coeffecient (inches)	Incremental Evaporation (acre-feet)	Potable Deliveries (90%) (acre-feet)	M&I Deliveries (60.8%) (acre-feet)	Irrigation (35%) (acre-feet)	Total Return Flow (acre-feet)	Less Incremental Evaporation	With 16% Evaporation	Previous Month Total Surface Area (acres)	Previous Month Total Volume (acre-ft)	Previous Month Total Volume w/o PRP Water (acre-ft)	Total Surface Area of Previous Month Water w/o PRP Water (acres)	Net Area of PRP Water (acres)	Evaporation for Double Counted Area (acre-ft)	Cumulative Return Flow Volume in Utah Lake (acre-ft)	
November	-4.49	81,834	81,818	16	98,669,294	2.8	3.67	389.70			389.70	386.03	327.35							2,997.86	
December	-4.53	81,704	81,690	14	88,351,373	1.14	1.34	368.10			368.10	366.76	309.20	81,704	469,278	466,280	81,537	168	16	**3,348.67**	
January	-3.63	84,573	84,547	26	162,386,412	0.77	1.66	886.50			886.50	884.84	744.66	84,573	544,066	540,717	84,401	172	11	**4,222.46**	
February	-3.49	85,011	84,999	12	77,798,447	0.72	0.74	865.80			865.80	865.06	727.27	85,011	556,783	552,560	84,840	171	10	**5,077.28**	
March	-3.31	85,571	85,557	14	86,732,438	0.85	0.98	803.70			803.70	802.72	675.11	85,571	569,567	564,490	85,277	293	21	**5,859.24**	
April	-3.56	84,792	84,775	17	108,737,118	1.47	2.12	226.01		299.25	525.25	523.13	441.21	84,792	548,302	542,443	84,465	327	40	**6,342.36**	
May	-3.3	85,602	85,564	38	237,796,076	2.88	9.10		4.86	1,028.36	1,033.22	1,024.12	867.90	85,602	569,568	563,226	85,231	370	89	**7,277.62**	
June	-4.04	83,277	83,223	54	340,878,355	4.03	18.25		214.62	1,204.91	1,419.54	1,401.29	1,192.41	83,277	510,507	503,229	82,983	294	99	**8,580.05**	-459.96
July	-4.75	80,989	80,913	76	477,127,229	6.92	43.86		214.62	1,709.30	1,923.92	1,880.06	1,616.09	80,989	444,938	436,358	80,329	660	381	**79.56**	
August	-5.35	79,006	78,911	95	598,162,164	9.33	74.14		900.28	1,596.22	2,496.50	2,422.36	2,097.06	79,006	397,127	397,047	78,685	321	250	**2,252.27**	
September	-5.85	77,316	77,228	88	549,782,751	8.3	60.62		392.36	1,760.69	2,153.05	2,092.43	1,808.57	77,316	358,206	355,954	76,891	425	294	**4,050.67**	
October*	-5.9	77,145	77,081	64	404,097,516	5.19	27.86		934.97	956.87	1,891.84	1,863.97	1,589.14	77,145	358,199	354,148	76,810	335	145	**5,769.76**	
								3,539.81	2,661.73	8,555.58	14,757.12	**14,512.76**	12,395.98						**1,355**	

*Estimated

Difference Between Old and New Method
Increase 2,116.78

1 acre = 6,272,640 square inches

1 cubic inch = 1.33E-08 acre-feet

Return Flow Estimates-Imported Water From Duchesne and Weber Basins
Provo River Water Users
Water Year 2016
Association Proposed Method

Shareholder	Nov A	Nov B	Dec A	Dec B	Jan A	Jan B	Feb A	Feb B	Mar A	Mar B	Apr A	Apr B	May A	May B	June A	June B	July A	July B	Aug A	Aug B	Sep A	Sep B	Oct A	Oct B	Totals	Potable	Potable (90%)	General M&I Deliveries	General M&I Deliveries (60.8%)	Irrigation	Irrigation (35%)	Total Return Flows
Provo City	200	201	199	212	189	201	188	193	591	228	241	40	141	106.1	143.95	82.21	23.43	84.28	362.3	417.12	192.29	176.08	57.29	336	4805.05	2,683	2,415	2,122	1,290		-	3,705
Orem City																											-				-	-
Provo Res. Co.							246	200																							-	-
Provo Bench												8								517.48	121.12	27.57	165.92	321	1599.09	446	401	1,153	701		-	1,102
MWD						133			133	141															8		-				-	-
Dixon	112				6	69															75				407		-				-	-
JVWCD Jacob Canal												64.15	618.69		289.87										262		-				-	-
Highland City - Provo Res. Co.																	28	211.68	121	65.6		26.17	17		972.71		-			973	340	340
Highland City HCD																	145.3	253.6	238.5	136	280.01	45.34			469.45		-			469	164	164
Pleasant Grove City																									1098.75		-			1,099	385	385
Provo Res. Co.																	94.42			144	75		11.8		325.22		-			325	114	114
MWD												14	5	1				74.2		9.2		71.84			175.24		-			175	61	61
Irrigation														13	125	199	192.08	329.76	253	164.56	43.5	40.8			1360.7		-			1,361	476	476
Provo Bench															45.8					12.53	123.68				182.01		-			182	64	64
Lindon City																											-				-	-
Provo Res. Co.																									0		-				-	-
Lindon City											13	15									45				73		-			73	26	26
Provo Bench															104										104		-			104	36	36
Provo Res. Co. - Alpine District															10.8	7.7	126.86	174.78	16.4	63.98	132.32	27.38	14.28		574.5		-			575	201	201
Lehi City																											-				-	-
Provo Res. Co.																12.36		48	5.9			36.15	12.6		115.01		-			115	40	40
Lehi City																		57.4			9	45	53.9	5.5	170.8		-			171	60	60
HCD																43.2	171.1	87.8	47.35	184.8	91.1	11.2			636.55		-			637	223	223
Lehi Irrigation																											-				-	-
Provo Res. Co.																	8.29	60.1	9.35	10.68	140.7	60.75	47.6		337.47		-			337	118	118
American Fork City																											-				-	-
Provo Res. Co.																	58.8			31.1					89.9		-			90	31	31
MWD																			112	131.6	106.8	7.1			357.5		-			358	125	125
HCD																4.7	8.1	180.2	123.3			13.7			330		-			330	116	116
Highland Con. Dist Other																69.1	111.7	144.7	142.4	152.5	111.2	85.5			817.1		-			817	286	286
MWD of SL & S Penstock												937.00	2192.00		2424.00		2532.00		2448.00		2227.00		760.00		13520		-			13,520	4,732	4,732
																									28,791	**3,129**	**2,816**	**3,275**	**1,991**	**21,710**	**7,598**	**12,406**

Return Flow Percentage 2016 **43%**

Notes:
1. M&I flows estimate as indoor usage from Nov thru April
2. Summer usage from May thru October based on recent State of Utah study showing combined return flows of 60.8%

2016 Water Year

Association Proposed Method

Month	EOM Elevation (feet below compromise)	EOM Surface area w/ PRP Water (acres)	EOM Surface area w/o PRP Water (acres)	Incremental Increase in Surface Area (acres)	square inches	Incremental Evaporation Coeffecient (inches)	Incremental Evaporation (acre-feet)	Potable Deliveries (90%) (acre-feet)	M&I Deliveries (60.8%) (acre-feet)	Irrigation (35%) (acre-feet)	Total Return Flow (acre-feet)	Less Incremental Evaporation
November	-5.63	78,064	78,044	20	125,207,767	2.8	4.66	461.70			461.70	457.04
December	-5.65	77,996	77,980	16	101,035,914	1.14	1.53	369.90			369.90	368.37
January	-4.89	80,530	80,508	22	137,536,533	0.77	1.41	538.20			538.20	536.79
February	-4.56	81,607	81,578	30	186,176,188	0.72	1.78	744.30			744.30	742.52
March	-4.31	82,414	82,376	38	240,171,833	0.85	2.71	983.70			983.70	980.99
April	-4.38	82,189	82,164	25	154,212,257	1.47	3.01	260.10		365.10	625.20	622.19
May	-4.44	81,995	81,950	45	282,073,276	2.88	10.79		150.24	990.39	1,140.63	1,129.84
June	-5.1	79,838	79,784	54	339,308,110	4.03	18.17		137.51	1,167.44	1,304.94	1,286.77
July	-5.95	76,974	76,891	83	519,670,268	6.92	47.78		65.49	1,784.60	1,850.09	1,802.32
August	-6.78	74,069	73,952	116	730,277,612	9.33	90.52		788.52	1,618.31	2,406.83	2,316.31
September	-6.99	73,315	73,230	84	528,156,279	8.3	58.24		359.97	1,349.68	1,709.66	1,651.42
October*	-6.95	73,459	73,417	42	265,090,624	5.19	18.28		535.17	322.94	858.11	839.83
								3,357.90	2,036.89	7,598.47	12,993.25	**12,734.39**

*Estimated ut lake elevation

1 acre = 6,272,640 square inches

1 cubic inch = 1.33E-08 acre-feet

Month Total Surface Area	Month Total Volume (acre-ft)	Month Total Volume w/o PRP	Surface Area of Previous Month	Net Area of PRP Water (acres)	on for Double Counted Area (acre-	e Return Flow Volume in Utah Lake
						6,654.44
77,996	373,672	367,018	77,382	614	58	**6,964.45**
80,530	436,881	429,917	80,064	467	30	**7,471.30**
81,607	461,137	453,666	81,031	576	35	**8,179.27**
82,414	485,675	477,496	81,981	434	31	**9,129.53**
82,189	477,465	468,336	81,619	570	70	**9,681.84**
81,995	477,458	467,776	81,596	399	96	**10,715.92**
79,838	420,876	410,160	79,241	597	201	**11,802.12**
76,974	350,525	338,723	76,112	862	497	**13,107.63**
74,069	290,321	277,214	73,195	874	679	**14,744.47**
73,315	275,624	260,879	72,387	927	641	**15,754.65**
73,459	275,631	259,876	72,335	1,124	486	**16,108.41**
					2,823	

Return Flow Estimates-Imported Water From Duchesne and Weber Basins
Provo River Water Users
Water Year 2017
Association Proposed Method

Shareholder	Nov A	Nov B	Dec A	Dec B	Jan A	Jan B	Feb A	Feb B	Mar A	Mar B	Apr A	Apr B	May A	May B	June A	June B	July A	July B	Aug A	Aug B	Sep A	Sep B	Oct A	Oct B	Totals	Potable	Potable (90%)	General M&I Deliveries	General M&I Deliveries (60.8%)	Irrigation	Irrigation (35%)	Total Return Flows
Provo City	191	188	0	216	200	213	205	176	207	179	195	221	16	12	20	20	329	103	107	97	90	103			3088	2,191	1,972	897	545		-	2,517
Orem City																																
Provo Res. Co.																				7					7	-	-	7	4		-	4
Provo Bench																									0		-				-	-
MWD	137	200	0	0	3	211	300	223	280	308	282	370													2314		-				-	-
Dixon																									0		-				-	-
JVWCD Jacob Canal																									0		-				-	-
Highland City - Provo Res. Co.													6												6		-				-	-
Highland City HCD																	216	249	173	128	104	12			882		-			6	2	2
Pleasant Grove City															328	328	46	63	6	144	16				931		-			882	309	309
Provo Res. Co.																														-	-	-
MWD												26													931		-			931	326	326
Irrigation																									0		-			-	-	-
Provo Bench																									26		-			26	9	9
Lindon City																									0		-			-	-	-
Provo Res. Co.															122	107														-	-	-
Lindon City												34					6								229		-			229	80	80
Provo Bench																									40		-			40	14	14
Provo Res. Co. - Alpine District												12				5	5		59						0		-			-	-	-
Lehi City																									81		-			81	28	28
Provo Res. Co.																506	61	48			6									-	-	-
Lehi City												2	0	31	254			18				4			621		-			621	217	217
HCD																	112	56	75		67				309		-			309	108	108
Lehi Irrigation																									310		-			310	109	109
Provo Res. Co.												2				95		90	83						270		-			270	95	95
American Fork City																														-	-	-
Provo Res. Co.																		28	95		24				147		-			147	51	51
MWD																			12	92					104		-			104	36	36
HCD																					144	24			168		-			168	59	59
Highland Con. Dist Other																	34	195	295	282	187	49			1042		-			1,042	365	365
MWD of SL & S Penstock												1819.00	1794.00		1795.00		1794.00		1795.00		1795.00		1436.00		12228		-			12,228	4,280	4,280
																									22,803	**2,191**	**1,972**	**904**	**550**	**17,394**	**6,088**	**8,609**
																									Return Flow Percentage 2017				**38%**			

Notes:
1. M&I flows estimate as indoor usage from Nov thru April
2. Summer usage from May thru October based on recent State of Utah study showing combined return flows of 60.8%

2017 Water Year

Association Proposed Method

Month	EOM Elevation (feet below compromise)	EOM Surface area w/ PRP Water (acres)	EOM Surface area w/o PRP Water (acres)	Incremental Increase in Surface Area (acres)	square inches	Incremental Evaporation Coeffecient (inches)	Incremental Evaporation (acre-feet)	Potable Deliveries (90%) (acre-feet)	M&I Deliveries (60.8%) (acre-feet)	Irrigation (35%) (acre-feet)	Total Return Flow (acre-feet)	Less Incremental Evaporation	Previous Month Total Surface Area (acres)	Previous Month Total Volume (acre-ft)	Previous Month Total Volume w/o PRP Water (acre-ft)	Total Surface Area of Previous Month Water w/o PRP Water (acres)	Net Area of PRP Water (acres)	Evaporation for Double Counted Area (acre-ft)	Cumulative Return Flow Volume in Utah Lake (acre-ft)
November	-6.73	74,247	74,216	31	192,946,305	2.8	7.18	644.40			644.40	637.22							21,390.60
December	-6.25	75,937	75,928	9	56,158,752	1.14	0.85	194.40			194.40	193.55							
January	-5.59	78,199	78,175	24	153,031,716	0.77	1.57	564.30			564.30	562.73	75,937	327,687	306,297	74,603	1,333	127	**21,457.50**
February	-4.81	80,792	80,760	33	206,434,724	0.72	1.97	813.60			813.60	811.63	78,199	381,451	359,994	77,071	1,128	72	**21,947.85**
March	-4.29	82,479	82,444	34	214,023,207	0.85	2.42	876.60			876.60	874.18	80,792	444,930	422,982	79,777	1,016	61	**22,698.52**
April	-3.55	84,823	84,763	60	377,837,893	1.47	7.38	961.20		663.25	1,624.45	1,617.07	82,479	485,678	462,979	81,405	1,074	76	**23,496.66**
May	-2.61	87,424	87,405	18	114,182,351	2.88	4.37		17.02	640.85	657.87	653.51	84,823	548,303	524,807	83,804	1,019	125	**24,988.90**
June	-2.7	87,207	87,172	35	218,051,407	4.03	11.67		24.32	1,239.00	1,263.32	1,251.65	87,424	630,087	605,098	86,655	769	184	**25,457.94**
July	-3.2	85,912	85,864	47	296,743,788	6.92	27.28		262.66	1,057.35	1,320.01	1,292.73	87,207	621,367	595,909	86,405	802	269	**26,440.38**
August	-3.77	84,132	84,085	47	297,638,715	9.33	36.89		128.29	1,133.65	1,261.94	1,225.05	85,912	578,129	551,689	84,808	1,104	637	**27,096.53**
September	-4.18	82,831	82,794	37	234,852,006	8.3	25.90		117.34	851.20	968.54	942.65	84,132	531,428	504,331	83,025	1,107	861	**27,460.67**
October*	-4.1	83,086	83,067	19	120,642,115	5.19	8.32		-	502.60	502.60	494.28	82,831	493,926	466,465	81,544	1,287	890	**27,513.08**
													83,086	502,201	474,688	81,870	1,216	526	**27,481.27**
								4,054.50	549.63	6,087.90	10,692.03	**10,556.24**						**3,828**	

*Estimated ut lake elevation

1 acre =
6,272,640
square inches

1 cubic inch =
1.33E-08
acre-feet

Return Flow Summary
Provo River Water Users Association
Return Flows to Utah Lake
With State Engineer Proposed Values

Year	Return Flow Available (Previous Year Total WY End Return Flow Available)	Return Flow Exchanged	Return Flow Remaining at End of water Year	Current Year Return Flow	Total WY End Return Flow Available After Incremental Evaporation
2012	-	0	0	9,903	9,903
2013	9,903	10,000	(97)	5,011	4,914
2014	4,914	9,000	(4,086)	6,806	2,720
2015	2,720	10,000	(7,280)	9,976	2,696
2016	2,696	0	2,696	7,848	10,544
2017	10,544	0	10,544	5,685	16,230

Return Flow Available	Equal to the prior year return flow carryover (Column H)
Return Flow Usage	Either the requested volume of May 1 election or Provo River System storage water available for exchange
Return Flow Remaining	RF available less Usage
Current Year Return Flow	Annual Return flow as calculated in the preceeding Spreadsheets for each year.
Total WY End Return Flow Available	The volume of Return Flow water Avilable in Utah Lake for use the following year (Column C)

Return Flow Estimates-Imported Water From Duchesne and Weber Basins
Provo River Water Users
Water Year 2012

Geographic C

With State Engineer Proposed Values

Shareholder	Nov A	Nov B	Dec A	Dec B	Jan A	Jan B	Feb A	Feb B	Mar A	Mar B	Apr A See note 3	Apr B	May A	May B	June A	June B	July A	July B	Aug A	Aug B	Sep A	Sep B	Oct A	Oct B	Totals	Potable	Potable (80%)	General M&I Deliveries	General M&I Deliveries (50%)	Irrigation	Irrigation (35%)	Total Return Flows
Provo City	0	0	0	0	0	0	0	0	0	0	87.2	10.7	14.2	8.1	12.1	14.2	16.5	66.2	20.5	21.3	0	16.9	7.8	9	304.7	98	78	207	103		-	182
North Fork SSD-Hamblin Exchange	0	0	0	0	0	0	0	0	0	0	4.4	8.7	9.2	3.1	6.1	7.4	6.5	7.2	7.5	8.3	5.9	11.9	4.8	6								
Redford-Hamblin Exchange	0	0	0	0	0	0	0	0	0	0	1.6	2	5	5	6	7	10	11	13	13	5	5	3	3								
Orem City																											-					
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	89.6	156	165.6	729	393	211	365	1086.2	0	0	0	0	0	0	3195.4	90	81	1,451	882		-	963
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	141.08	425.1	0	0	312.1	0	0	878.28		-				-	-
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	408.2	95.1	0	631.7	482	1617		-				-	-
Dixon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	531	0	0	0	531		-				-	-
JVWCD Jacob Canal																									0		-			5,286	1,850	1,850
Highland City - Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60.35	0	0	146.234	0	0	0	0	0	0	206.584		-			207	72	72
Highland City HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	272	191.25	39.1	150.7475	365.5	413.1	381.9475	257.8475	0	2071.4925		-			2,071	725	725
Pleasant Grove City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	154	236.9	136.9	0	0	527.8		-			528	185	185
MWD & Irr.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58.6	30	0	50	60	60	55	60	0	0	373.6		-			374	131	131
Irrigation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	0	32	51.9	30	0	0	0	0	193.9		-			194	68	68
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2		-			2	1	1
Lindon City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Lindon City	0	0	0	0	0	0	0	0	0	0	52	36	105	36	0	30	0	0	0	0	0	0	8	0	267		-			267	93	93
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Provo Res. Co. - Alpine District	0	0	0	0	0	0	0	0	0	0	0	0	0	140.25	21.93	361.335	424.8725	485.265	5.2275	201.4364	187.476	124.015	0	0	1951.8074		-			1,952	683	683
Lehi City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.575	140.25	20.8125	22.2	155.9175	105.5175	71.85	95.07	0	0	616.1925		-			616	216	216
Lehi City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79.125	75.375	0	73.8	51.9	0	110.25	0	390.45		-			390	137	137
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.925	0	48	48	0	48	142.65	152.85	0	0	445.425		-			445	156	156
Lehi Irrigation																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	12		-			12	4	4
American Fork City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	73.25	0	0	0	0	73.45		-			73	26	26
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28.9	124.4	106.55	405	226.7	0	0	131.5	0	0	1023.05		-			1,023	358	358
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	240.1	0	177.8	264.4	258.5	0	0	940.8		-			941	329	329
Highland Con. Dist Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102.255	87.72	154.275	252.195	90.015	83.64	0	0	0	0	770.1		-			770	270	270
MWD of SL & S Penstock	0	0	0	0	0	0	0	0	0	0	0	0	0	0	863.34	852.42	878.34	902.16	833.88	884.04	791.34	773.52	0	0	6779.04		-			6,779	2,373	2,373
																									23,171	**188**	**159.0**	**1,658**	**986**	**21,931**	**7,676**	**8,820**

Notes:
1. M&I flows estimate as indoor usage from Nov thru April
2. Summer usage from May thru October based on recent State of Utah study showing combined return flows of 60.8%
3. Utah Lake stopped spilling on April 9. Use 6/15ths of April A values from the river commissioner report.

Return Flow Percentage 2012 **38%**

2012 Water Year

With State Engineer Proposed Values

Delivery Values

Month	EOM Elevation (feet below compromise)	EOM Surface area w/ PRP Water (acres)	EOM Surface area w/o PRP Water (acres)	Incremental Increase in Surface Area (acres)	square inches	Incremental Evaporation Coeffecient (inches)	Incremental Evaporation (acre-feet)	Potable Deliveries (80%) (acre-feet)	M&I Deliveries (50%) (acre-feet)	Irrigation (35%) (acre-feet)	Total Return Flow (acre-feet)	Return Flow Less Incremental Evaporation (acre-ft)	With 16% Evaporation	Previous Month Total Surface Area (acres)	Previous Month Total Volume (acre-ft)	Previous Month Total Volume w/o PRP Water (acre-ft)	Total Surface Area of Previous Month Water w/o PRP Water (acres)	Net Area of PRP Water (acres)	Evaporation for Double Counted Area (acre-ft)	Cumulative Return Flow Volume in Utah Lake (acre-ft)
November	-0.2	93,742	93,742	-	-	2.8	-	-			-	-	-							
December	0.12	94,654	94,654	-	-	1.14	-	-			-	-	-							
January	0.46	95,644	95,644	-	-	0.77	-	-			-	-	-							
February	0.31	95,205	95,205	-	-	0.72	-	-			-	-	-							
March	0.32	95,234	95,234	-	-	0.85	-	-			-	-	-							
April	0.18	94,828	94,821	7	41,376,951	1.47	0.81	91.68		116.76	208.44	207.63	175.09							**207.63**
May	-0.3	93,460	93,400	60	373,515,984	2.88	14.29		469.60	1,948.44	2,418.04	2,403.75	2,031.15	93,460	837,688	837,480	93,327	133	32	**2,579.46**
June	-1	91,534	91,488	46	289,795,420	4.03	15.52		328.40	1,093.40	1,421.80	1,406.28	1,194.31	91,534	773,032	770,452	91,337	197	66	**3,919.55**
July	-1.9	89,181	89,093	88	552,362,209	6.92	50.78		854.84	1,614.50	2,469.34	2,418.56	2,074.24	89,181	691,825	687,906	88,956	225	130	**6,208.20**
August	-2.58	87,496	87,445	51	322,142,307	9.33	39.93		458.45	1,341.05	1,799.50	1,759.57	1,511.58	87,496	634,459	628,251	87,289	207	161	**7,806.45**
September	-3.05	86,375	86,303	73	454,766,400	8.3	50.15		491.45	1,515.12	2,006.57	1,956.43	1,685.52	86,375	591,034	583,227	85,956	419	289	**9,473.42**
October	-3	86,495	86,491	4	27,219,632	5.19	1.88		491.45	132.33	623.78	621.91	523.98	86,495	595,344	585,870	86,051	444	192	**9,903.36**
								91.68	3,094.19	7,761.60	10,947.47	**10,774.12**	9,195.88							

Difference Between Old and New Method

Increase 1,578.25

1 acre = 6,272,640 square inches

1 cubic inch = 1.33E-08 acre-feet

Return Flow Estimates-Imported Water From Duchesne and Weber Basins
Provo River Water Users
Water Year 2013
With State Engineer Proposed Values

Shareholder	Nov A	Nov B	Dec A	Dec B	Jan A	Jan B	Feb A	Feb B	Mar A	Mar B	Apr A	Apr B	May A	May B	June A	June B	July A	July B	Aug A	Aug B	Sep A	Sep B	Oct A	Oct B	Totals	Potable	Potable (80%)	General M&I Deliveries	General M&I Deliveries (50%)	Irrigation	Irrigation (35%)	Total Return Flows
Provo City	115	208	188	181	204	224	221	176	201	215	202	47	0	0	0	22.5	22.3	22.9	20.8	22	7.1	9.5	10.3	227	2546.4	2,182	1,746	364	182		-	1,928
North Fork SSD-Hamblin Exchange	8	8	6	7	7	8	9	6	6	6	7	4.5	8.4	13	6.9	10.5	9.3	8.9	11.8	12	3	6.2	6.3	8								
Redford-Hamblin Exchange	2	3	2	3	3	3	3	3	2	4	2	1	6	8	11	12	13	14	9	10	4	3	4	3								
Orem City																																
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-		-	-
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	519.9	0	0	0	0	0	0	0	0	0	0	0	519.9		-				-	-
MWD	0	0	0	0	377	394	390	321	363	328	135	432	0	0	0	0	0	0	0	0	0	0	0	0	2740		-				-	-
Dixon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-				-	-
JVWCD Jacob Canal																									0		-			1	0	0
Highland City - Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Highland City HCD	0	0	0	0	0	0	0	0	0	0	0	22.1	39.1	0	14.365	209.1	179.35	228.225	225.93	71.23	132.6	57.12	0	0	1179.12		-			1,179	413	413
Pleasant Grove City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
MWD & Irr.	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	8		-			8	3	3
Irrigation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Lindon City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Lindon City	0	0	0	0	0	0	0	0	0	0	0	106	0	0	0	0	0	0	0	0	0	0	0	0	106		-			106	37	37
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	6.63	0	36.465	202.81	0	0	58.395	22.61	5.695	13.515	4.335	0	350.455		-			350	123	123
Provo Res. Co. - Alpine District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60.75	60	29.175	0	0	47.25	13.575	0	0	210.75		-			211	74	74
Lehi City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42.6	61.65	0	104.25		-			104	36	36
Lehi City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93.75	6.45	78.3	0	47.175	29.475	0	0	255.15		-			255	89	89
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Lehi Irrigation																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	1.65	0	0	0	0	0	0	0	0	0	0	0	1.65		-			2	1	1
American Fork City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	3.6	0	0	0	0	0	0	0	27.6		-			28	10	10
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46.2	54.4	29.2	29.4	0	0	159.2		-			159	56	56
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47.1	166.5	61.6	0	0	0	3.7	0	278.9		-			279	98	98
Highland Con. Dist Other	0	0	0	0	0	0	0	0	0	0	0	0	16.405	0	24.48	0	43.69	97.58	66.64	54.4	17.17	0	0	0	320.365		-			320	112	112
MWD of SL & S Penstock	0	0	0	0	0	0	0	0	0	0	0.96	285.06	796.74	759.9	0	0	0	0	0	0	0	0	0	0	1842.66		-			1,843	645	645
																									10,650	**2,182**	**1,746**	**364**	**182**	**4,845**	**1,696**	**3,624**

Notes:
1. M&I flows estimate as indoor usage from Nov thru April
2. Summer usage from May thru October based on recent State of Utah study showing combined return flows of 60.8%

Return Flow Percentage 2013 **34%**

2013 Water Year

With State Engineer Proposed Values

Month	EOM Elevation (feet below compromise)	EOM Surface area w/ PRP Water (acres)	EOM Surface area w/o PRP Water (acres)	Incremental Increase in Surface Area (acres)	square inches	Incremental Evaporation Coeffecient (inches)	Incremental Evaporation (acre-feet)	Potable Deliveries (80%) (acre-feet)	M&I Deliveries (50%) (acre-feet)	Irrigation (35%) (acre-feet)	Total Return Flow (acre-feet)	Less Incremental Evaporation	With 16% Evaporation	Previous Month Total Surface Area (acres)	Previous Month Total Volume (acre-ft)	Previous Month Total Volume w/o PRP Water (acre-ft)	Surface Area of Previous Month Water w/o PRP Water (acres)	Net Area of PRP Water (acres)	Evaporation for Double Counted Area (acre-ft)	Cumulative Return Flow Volume in Utah Lake (acre-ft)
November	-2.55	87,568	87,560	8	50,037,680	2.8	1.86	275.20			275.20	273.34	231.17							10,176.70
December	-2.18	88,477	88,468	9	57,248,124	1.14	0.87	309.60			309.60	308.73	260.06	88,477	669,638	659,461	88,154	323	31	**10,454.78**
January	-1.84	89,334	89,323	11	70,499,873	0.77	0.72	976.00			976.00	975.28	819.84	89,334	700,742	690,288	89,024	310	20	**11,410.15**
February	-1.46	90,314	90,304	10	64,592,066	0.72	0.62	903.20			903.20	902.58	758.69	90,314	732,167	720,756	89,894	420	25	**12,287.51**
March	-1.05	91,400	91,389	11	71,497,651	0.85	0.81	900.00			900.00	899.19	756.00	91,400	768,468	756,180	90,920	479	34	**13,152.76**
April	-1.15	91,132	91,119	13	81,287,956	1.47	1.59	664.40		147.74	812.14	810.55	682.20	91,132	759,352	746,200	90,629	503	62	**13,901.72**
May	-1.3	90,735	90,707	28	173,680,374	2.88	6.65		277.65	567.15	844.80	838.15	709.63	90,735	745,728	731,826	90,213	522	125	**14,614.71**
June	-2.08	88,728	88,720	8	47,556,910	4.03	2.55		31.45	200.19	231.64	229.09	194.58	88,728	678,495	663,880	88,278	449	151	**14,693.00**
July	-2.68	87,255	87,243	12	72,164,134	6.92	6.63		45.20	334.40	379.60	372.96	318.86	87,255	625,726	611,033	86,817	438	253	**4,813.14**
August	-3.5	84,979	84,967	12	72,319,849	9.33	8.96		42.80	258.90	301.70	292.73	253.43	84,979	552,537	547,724	84,661	319	248	**4,858.20**
September	-3.92	83,658	83,650	8	49,115,955	8.3	5.42		16.40	162.67	179.07	173.66	150.42	83,658	518,851	513,993	83,394	264	183	**4,849.20**
October	-3.74	84,227	84,220	7	42,940,599	5.19	2.96		129.30	24.39	153.69	150.73	129.10	84,227	535,628	530,778	84,029	198	86	**4,914.35**
								4,028.40	542.80	1,695.44	6,266.64	**6,227.01**	5,263.97					1,216	4,865.99

Difference Between Old and New Method

Increase 963.03

1 acre = 6,272,640 square inches

1 cubic inch = 1.33E-08 acre-feet

Return Flow Estimates-Imported Water From Duchesne and Weber Basins
Provo River Water Users
Water Year 2014
With State Engineer Proposed Values

Shareholder	Nov A	Nov B	Dec A	Dec B	Jan A	Jan B	Feb A	Feb B	Mar A	Mar B	Apr A	Apr B	May A	May B	June A	June B	July A	July B	Aug A	Aug B	Sep A	Sep B	Oct A	Oct B	Totals	Potable	Potable (80%)	General M&I Deliveries	General M&I Deliveries (50%)	Irrigation	Irrigation (35%)	Total Return Flows
Provo City	195	206	194	211	200	214	174	150	173	207	271	62.34	12.38	143.5	36.85	110.14	34.28	23.64	9.13	14.45	10	12.7	10.5	229	2903.91	2,257	1,806	647	323		-	2,129
North Fork SSD-Hamblin Exchange	8	9	8	8	8	8	9	8	8	9	7.3	9	8.4	8.5	3.9	5.2	11.28	11.6	4.1	4.5	4.1	8.7	5.5	8	183.08							
Redford-Hamblin Exchange	1	2	2	4	1	2	3	2	2	3	2	2	4	4	8	10	12	12	5	5	6	4	5	3	104							
Orem City																																
Provo Res. Co.	6	0	0	0	303	280	223	285	339	231	249	0	0	0	0	0	225	225	524.8	244.99	429.8	306.45	284.8	212	4368.84	1,910	1,719	2,453	1,491		-	3,210
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-				-	-
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-				-	-
Dixon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-				-	-
JVWCD Jacob Canal														246.86	78.8										325.66		-			326	114	114
Highland City - Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	288.0735	96.73	6.035	124.1	166.26	0	0	0	681.1985		-			681	238	238
Highland City HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72.25	0	272	91.6725	8.3045	0	208.437	93.6445	0	746.3085		-			746	261	261
Pleasant Grove City																														-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	0	0	0	0	0	0	6	81		-			81	28	28
MWD & Irr.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Irrigation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0	0	0	30	0	0	48		-			48	17	17
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0	0	0	31		-			31	11	11
Lindon City																														-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3		-			3	1	1
Lindon City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	50	105	0	0	0	0	0	171		-			171	60	60
Provo Res. Co. - Alpine District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26.35	29.75	86.8275	139.4	7.48	4.42	0	0	16.507	1.615	312.3495		-			312	109	109
Lehi City																														-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15.5475	60.15	34.05	14.25	22.5	32.265	25.275	6.6	210.6375		-			211	74	74
Lehi City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21.525	60.3	56.925	60	37.5	0	0	0	236.25		-			236	83	83
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.275	87.375	76.8	68.925	75.975	36.6	46.5	0	0	417.45		-			417	146	146
Lehi Irrigation																														-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
American Fork City																														-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42.7	0	0	0	0	0	0	0	42.7		-			43	15	15
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98.9	143.8	76.8	0	0	0	0	0	319.5		-			320	112	112
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14.9	94	73.7	62.6	0	0	245.2		-			245	86	86
Highland Con. Dist Other	0	0	0	0	0	0	0	0	0	0	0	0	21.845	68.595	6.715	68.595	111.265	89.59	85.595	95.03	139.315	54.06	2.72	0	743.325		-			743	260	260
MWD of SL & S Penstock	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	572.7	825.3	748.38	730.8	870.9	0	3748.08		-			3,748	1,312	1,312
																									15,922	**4,167**	**3,525**	**3,099**	**1,815**	**8,363**	**2,927**	**8,266**

Return Flow Percentage 2014 **52%**

Notes:
1. M&I flows estimate as indoor usage from Nov thru April
2. Summer usage from May thru October based on recent State of Utah study showing combined return flows of 60.8%

2014 Water Year

With State Engineer Proposed Values

Month	EOM Elevation (feet below compromise)**	EOM Surface area w/ PRP Water (acres)	EOM Surface area w/o PRP Water (acres)	Incremental Increase in Surface Area (acres)	square inches	Incremental Evaporation Coeffecient (inches)	Incremental Evaporation (acre-feet)	Potable Deliveries (80%) (acre-feet)	M&I Deliveries (50%) (acre-feet)	Irrigation (35%) (acre-feet)	Total Return Flow (acre-feet)	Less Incremental Evaporation	With 16% Evaporation	Previous Month Total Surface Area (acres)	Previous Month Total Volume (acre-ft)	Previous Month Total Volume w/o PRP Water (acre-ft)	Total Surface Area of Previous Month Water w/o PRP Water (acres)	Net Area of PRP Water (acres)	Evaporation for Double Counted Area (acre-ft)	Cumulative Return Flow Volume in Utah Lake (acre-ft)
November	-3.47	85,073	85,060	13	83,117,646	2.8	3.09	341.60			341.60	338.51	286.94							5,252.86
December	-3.2	85,912	85,899	13	81,828,976	1.14	1.24	341.60			341.60	340.36	286.94	85,912	578,129	572,876	85,582	330	31	**5,561.91**
January	-2.77	87,039	87,015	25	153,957,326	0.77	1.57	730.40			730.40	728.83	613.54	87,040	617,017	611,455	86,828	211	14	**6,277.17**
February	-2.32	88,131	88,110	21	131,038,437	0.72	1.25	683.20			683.20	681.95	573.89	88,131	656,398	650,121	87,894	237	14	**6,944.92**
March	-2.09	88,702	88,678	24	151,758,977	0.85	1.71	683.20			683.20	681.49	573.89	88,703	678,494	671,549	88,494	209	15	**7,611.61**
April	-2.15	88,552	88,537	15	93,224,310	1.47	1.82	482.11		5.60	487.71	485.89	409.68	88,552	669,640	662,029	88,226	325	40	**8,057.66**
May	-2.46	87,787	87,781	6	38,036,282	2.88	1.46		90.39	118.06	208.45	206.99	175.09	87,787	643,218	635,161	87,479	308	74	**8,190.70**
June	-3.34	85,478	85,470	8	48,612,960	4.03	2.60		87.05	108.76	195.80	193.20	164.47	85,478	569,564	561,373	85,163	314	105	**8,278.44**
July	-4.09	83,118	83,078	40	253,478,062	6.92	23.30		277.40	641.89	919.29	895.99	772.21	83,118	502,203	493,924	82,623	495	285	**-110.82**
August	-4.67	81,250	81,180	69	433,060,222	9.33	53.68		405.99	847.51	1,253.50	1,199.82	1,052.94	81,250	453,019	453,019	81,250	0	0	**1,089.00**
September	-4.66	81,282	81,213	69	430,540,965	8.3	47.47		390.88	846.97	1,237.85	1,190.37	1,039.79	81,282	453,020	451,931	80,961	321	222	**2,057.55**
October	-4.63	81,380	81,339	41	255,138,670	5.19	17.59		378.90	358.14	737.04	719.45	619.11	81,380	461,128	459,070	81,248	131	57	**2,720.21**
								3,262.11	1,630.60	2,926.93	7,819.64	**7,662.84**	6,568.50					**857**	

**From water report end of month value

Difference Between Old and New Method

Increase 1,094.34

1 acre = 6,272,640 square inches

1 cubic inch = 1.33E-08 acre-feet

Return Flow Estimates-Imported Water From Duchesne and Weber Basins
Provo River Water Users
Water Year 2015
With State Engineer Proposed Values

Shareholder	Nov A	Nov B	Dec A	Dec B	Jan A	Jan B	Feb A	Feb B	Mar A	Mar B	Apr A	Apr B	May A	May B	June A	June B	July A	July B	Aug A	Aug B	Sep A	Sep B	Oct A	Oct B	Totals	Potable	Potable (80%)	General M&I Deliveries	General M&I Deliveries (50%)	Irrigation	Irrigation (35%)	Total Return Flows
Provo City	199	201	198	211	191	209	194	169	197	212	174	10.12	3	5	4	17	21	22	464.47	329.37	24.75	31.88	15.08	798	3900.67	2,165	1,732	1,736	868		-	2,600
Orem City																											-				-	-
Provo Res. Co.	33	0	0	0	236	139	0	0	0	0	0	0	0	0	0	332	225	0	282.85	0	0	295.85	0	0	1543.7	408	367	1,136	691		-	1,058
Provo Bench	0	0	0	0	0	210	303	0	0	0	0	0	0	0	0	0	0	0	0	404.04	292.85	0	0	0	1209.89		-				-	-
MWD	0	0	0	0	0	0	0	296	328	0	0	0	0	0	0	0	0	85	0	0	0	0	141.7	583	1433.7		-				-	-
Dixon	0	0	0	0	0	0	0	0	0	156	0	67	0	0	0	0	0	0	0	0	0	0	0	0	223		-				-	-
JVWCD Jacob Canal												29.72		177.94		146.09									353.75		-			354	124	124
Highland City - Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	106.25	0	136	0	95.2	0	0	0	0	337.45		-			337	118	118
Highland City HCD	0	0	0	0	0	0	0	0	0	0	0	19.567	0	0	0	0	189.55	144.5	171.53	54.264	224.1875	113.05	111.843	0	1028.4915		-			1,028	360	360
Pleasant Grove City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	148	0	0	0	0	0	0	0	0	148		-			148	52	52
Irrigation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	26	112	88	83.8	83.6	85.6	93.62	15.68	0	599.3		-			599	210	210
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Lindon City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
Lindon City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	146	0	0	0	0	0	0	0	0	146		-			146	51	51
Provo Bench	0	0	0	0	0	0	0	0	0	0	0	11.1	0	0	6	0	0	0	0	74	28	4	0	4	127.1		-			127	44	44
Provo Res. Co. - Alpine District	0	0	0	0	0	0	0	0	0	0	0	122.8845	0	0	0	55.25	133.45	151.3	0	0	0	0	0	0.085	462.9695		-			463	162	162
Lehi City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	182.7	0	53.475	176.175	12.225	424.575		-			425	149	149
Lehi City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39.75	0	21	0	0	0	0	0	0	60.75		-			61	21	21
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	120.75	171	84.45	58.05	0	132.825	0	0	576.075		-			576	202	202
Lehi Irrigation																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		-			-	-	-
American Fork City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78.9	8.1	0	87		-			87	30	30
MWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	0	0	78.9	170.2	200.7	0	16.2	0	488		-			488	171	171
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	69	146	82.9	0	0	0	0	0	301.9		-			302	106	106
Highland Con. Dist Other	0	0	0	0	0	0	0	0	0	0	0	27.455	25.755	3.315	12.75	95.2	122.4	188.7	210.63	153.17	162.52	83.215	4.25	105.434	1194.794		-			1,195	418	418
MWD of SL & S Penstock	0	0	0	0	0	0	0	0	0	0	0	368.5681	796.2953	839.3168	726.0384	804.8703	813.6466	864.9749	789.5118	859.2743	803.0787	1360.21	1306.8	0	10332.59		-			10,333	3,616	3,616
																									24,980	**2,573**	**2,099**	**2,871**	**1,558**	**16,669**	**5,834**	**9,492**

Notes:
1. M&I flows estimate as indoor usage from Nov thru April
2. Summer usage from May thru October based on recent State of Utah study showing combined return flows of 60.8%

Return Flow Percentage 2015 **38%**

2015 Water Year
With State Engineer Proposed Values

Month	EOM Elevation (feet below compromise)	EOM Surface area w/ PRP Water (acres)	EOM Surface area w/o PRP Water (acres)	Incremental Increase in Surface Area (acres)	square inches	Incremental Evaporation Coeffecient (inches)	Incremental Evaporation (acre-feet)	Potable Deliveries (80%) (acre-feet)	M&I Deliveries (50%) (acre-feet)	Irrigation (35%) (acre-feet)	Total Return Flow (acre-feet)	Less Incremental Evaporation	With 16% Evaporation	Previous Month Total Surface Area (acres)	Previous Month Total Volume (acre-ft)	Previous Month Total Volume w/o PRP Water (acre-ft)	Total Surface Area of Previous Month Water w/o PRP Water (acres)	Net Area of PRP Water (acres)	Evaporation for Double Counted Area (acre-ft)	Cumulative Return Flow Volume in Utah Lake (acre-ft)	
November	-4.49	81,834	81,818	16	98,669,294	2.8	3.67	346.40			346.40	342.73	290.98							3,062.94	
December	-4.53	81,704	81,690	14	88,351,373	1.14	1.34	327.20			327.20	325.86	274.85	81,704	469,278	466,215	81,534	171	16	**3,372.60**	
January	-3.63	84,573	84,547	26	162,386,412	0.77	1.66	788.00			788.00	786.34	661.92	84,573	544,066	540,693	84,400	173	11	**4,147.83**	
February	-3.49	85,011	84,999	12	77,798,447	0.72	0.74	769.60			769.60	768.86	646.46	85,011	556,783	552,635	84,843	168	10	**4,906.62**	
March	-3.31	85,571	85,557	14	86,732,438	0.85	0.98	714.40			714.40	713.42	600.10	85,571	569,567	564,660	85,284	287	20	**5,599.73**	
April	-3.56	84,792	84,775	17	108,737,118	1.47	2.12	200.90		202.75	403.65	401.53	339.07	84,792	548,302	542,702	84,475	317	39	**5,962.43**	
May	-3.3	85,602	85,564	38	237,796,076	2.88	9.10		4.00	644.92	648.92	639.82	545.09	85,602	569,568	563,606	85,245	356	86	**6,516.72**	
June	-4.04	83,277	83,223	54	340,878,355	4.03	18.25		176.50	825.37	1,001.87	983.62	841.57	83,277	510,507	503,990	83,012	265	89	**7,411.26**	-459.96
July	-4.75	80,989	80,913	76	477,127,229	6.92	43.86		176.50	1,215.30	1,391.80	1,347.93	1,169.11	80,989	444,938	437,526	80,377	612	353	**-1,593.77**	
August	-5.35	79,006	78,911	95	598,162,164	9.33	74.14		740.37	1,131.26	1,871.63	1,797.49	1,572.17	79,006	397,127	397,127	79,006	0	0	**203.72**	
September	-5.85	77,316	77,228	88	549,782,751	8.3	60.62		322.67	1,198.18	1,520.85	1,460.23	1,277.51	77,316	358,206	358,003	76,983	333	231	**1,433.36**	
October*	-5.9	77,145	77,081	64	404,097,516	5.19	27.86		768.89	616.28	1,385.17	1,357.30	1,163.54	77,145	358,199	356,765	76,927	218	94	**2,696.47**	
								3,146.50	2,188.92	5,834.06	11,169.48	**10,925.12**	9,382.36						**949**	

*Estimated

Difference Between Old and New Method

Increase 1,542.76

1 acre = 6,272,640 square inches

1 cubic inch = 1.33E-08 acre-feet

Return Flow Estimates-Imported Water From Duchesne and Weber Basins

Provo River Water Users

Water Year 2016

With State Engineer Proposed Values

Shareholder	Nov A	Nov B	Dec A	Dec B	Jan A	Jan B	Feb A	Feb B	Mar A	Mar B	Apr A	Apr B	May A	May B	June A	June B	July A	July B	Aug A	Aug B	Sep A	Sep B	Oct A	Oct B	Totals	Potable	Potable (80%)	General M&I Deliveries	General M&I Deliveries (50%)	Irrigation	Irrigation (35%)	Total Return Flows
Provo City	200	201	199	212	189	201	188	193	591	228	241	40	141	106.1	143.95	82.21	23.43	84.28	362.3	417.12	192.29	176.08	57.29	336	4805.05	2,683	2,146	2,122	1,061		-	3,207
Orem City																									-		-				-	-
Provo Res. Co.							246	200												517.48	121.12	27.57	165.92	321	1599.09	446	401	1,153	701		-	1,102
Provo Bench												8													8		-				-	-
MWD						133			133	141															407		-				-	-
Dixon	112				6	69															75				262		-				-	-
JVWCD Jacob Canal												64.15	618.69		289.87										972.71		-			973	340	340
Highland City - Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23.8	179.928	102.85	55.76	0	22.2445	14.45	0	399.0325		-			399	140	140
Highland City HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	123.505	215.56	202.725	115.6	238.0085	38.539	0	0	933.9375		-			934	327	327
Pleasant Grove City																											-			-	-	-
Provo Res. Co.																	94.42			144	75		11.8		325.22		-			325	114	114
MWD												14	5	1				74.2		9.2		71.84			175.24		-			175	61	61
Irrigation														13	125	199	192.08	329.76	253	164.56	43.5	40.8			1360.7		-			1,361	476	476
Provo Bench															45.8					12.53	123.68				182.01		-			182	64	64
Lindon City																											-			-	-	-
Provo Res. Co.																									0		-			-	-	-
Lindon City											13	15									45				73		-			73	26	26
Provo Bench															104										104		-			104	36	36
Provo Res. Co. - Alpine District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.18	6.545	107.831	148.563	13.94	54.383	112.472	23.273	12.138	0	488.325		-			488	171	171
Lehi City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.27	0	36	4.425	0	0	27.1125	9.45	0	86.2575		-			86	30	30
Lehi City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43.05	0	0	6.75	33.75	40.425	4.125	128.1		-			128	45	45
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32.4	128.325	65.85	35.5125	138.6	68.325	8.4	0	0	477.4125		-			477	167	167
Lehi Irrigation																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.2175	45.075	7.0125	8.01	105.525	45.5625	35.7	0	253.1025		-			253	89	89
American Fork City																											-			-	-	-
Provo Res. Co.																	58.8			31.1					89.9		-			90	31	31
MWD																			112	131.6	106.8	7.1			357.5		-			358	125	125
HCD																4.7	8.1	180.2	123.3			13.7			330		-			330	116	116
Highland Con. Dist Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58.735	94.945	122.995	121.04	129.625	94.52	72.675	0	0	694.535		-			695	243	243
MWD of SL & S Penstock	0	0	0	0	0	0	0	0	0	0	0	562.2	1315.2	0	1454.4	0	1519.2	0	1468.8	0	1336.2	0	456	0	8112		-			8,112	2,839	2,839
																									22,624	**3,129**	**2,548**	**3,275**	**1,762**	**15,543**	**5,440**	**9,750**

Return Flow Percentage 2016 **43%**

Notes:

1. M&I flows estimate as indoor usage from Nov thru April
2. Summer usage from May thru October based on recent State of Utah study showing combined return flows of 60.8%

2016 Water Year

With State Engineer Proposed Values

Month	EOM Elevation (feet below compromise)	EOM Surface area w/ PRP Water (acres)	EOM Surface area w/o PRP Water (acres)	Incremental Increase in Surface Area (acres)	square inches	Incremental Evaporation Coeffecient (inches)	Incremental Evaporation (acre-feet)	Potable Deliveries (80%) (acre-feet)	M&I Deliveries (50%) (acre-feet)	Irrigation (35%) (acre-feet)	Total Return Flow (acre-feet)	Less Incremental Evaporation	Previous Month Total Surface Area (acres)	Previous Month Total Volume (acre-ft)	Previous Month Total Volume w/o PRP Water	Total Surface Area of Previous Month Water w/o	Net Area of PRP Water (acres)	Evaporation for Double Counted Area (acre-ft)	Cumulative Return Flow Volume in Utah Lake (acre-ft)
November	-5.63	78,064	78,046	18	111,295,793	2.8	4.14	410.40			410.40	406.26							3,102.73
December	-5.65	77,996	77,982	14	89,809,702	1.14	1.36	328.80			328.80	327.44	77,996	373,672	370,569	77,538	458	44	**3,386.66**
January	-4.89	80,530	80,511	19	122,254,696	0.77	1.25	478.40			478.40	477.15	80,530	436,881	433,495	80,211	319	20	**3,843.31**
February	-4.56	81,607	81,581	26	165,489,945	0.72	1.58	661.60			661.60	660.02	81,607	461,137	457,294	81,177	430	26	**4,477.52**
March	-4.31	82,414	82,380	34	213,486,074	0.85	2.41	874.40			874.40	871.99	82,414	485,675	481,198	82,126	288	20	**5,329.09**
April	-4.38	82,189	82,171	18	114,726,973	1.47	2.24	231.20		233.92	465.12	462.88	82,189	477,465	472,136	81,769	420	51	**5,740.52**
May	-4.44	81,995	81,963	32	199,463,906	2.88	7.63		123.55	683.51	807.06	799.43	81,995	477,458	471,717	81,752	243	58	**6,481.69**
June	-5.1	79,838	79,799	39	242,257,483	4.03	12.97		113.08	818.62	931.70	918.72	79,838	420,876	414,394	79,419	419	141	**7,259.61**
July	-5.95	76,974	76,912	62	388,552,587	6.92	35.72		53.86	1,329.44	1,383.30	1,347.58	76,974	350,525	343,265	76,319	655	377	**8,229.69**
August	-6.78	74,069	73,979	90	562,023,456	9.33	69.66		648.45	1,203.85	1,852.30	1,782.64	74,069	290,321	282,092	73,435	634	493	**9,519.64**
September	-6.99	73,315	73,252	62	389,957,110	8.3	43.00		296.03	966.27	1,262.30	1,219.30	73,315	275,624	266,104	72,651	664	459	**10,279.69**
October*	-6.95	73,459	73,427	32	199,113,467	5.19	13.73		440.11	204.43	644.54	630.81	73,459	275,631	265,351	72,613	846	366	**10,544.49**
								2,984.80	1,675.07	5,440.04	10,099.91	**9,904.21**						**2,056**	

*Estimated ut lake elevation

1 acre =
6,272,640
square inches

1 cubic inch =
1.33E-08
acre-feet

Return Flow Estimates-Imported Water From Duchesne and Weber Basins
Provo River Water Users
Water Year 2017
With State Engineer Proposed Values

Shareholder	Nov A	Nov B	Dec A	Dec B	Jan A	Jan B	Feb A	Feb B	Mar A	Mar B	Apr A	Apr B	May A	May B	June A	June B	July A	July B	Aug A	Aug B	Sep A	Sep B	Oct A	Oct B	Totals	Potable	Potable (80%)	General M&I Deliveries	General M&I Deliveries (50%)	Irrigation	Irrigation (35%)	Total Return Flows
Provo City	191	188	0	216	200	213	205	176	207	179	195	221	16	12	20	20	329	103	107	97	90	103			3088	2,191	1,753	897	449		-	2,201
Orem City																															-	-
Provo Res. Co.																				7					7	-	-	7	4		-	4
Provo Bench																									0		-				-	-
MWD	137	200	0	0	3	211	300	223	280	308	282	370													2314		-				-	-
Dixon																									0		-				-	-
JVWCD Jacob Canal																									0		-				-	-
Highland City - Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	5.1	0	0	0	0	0	0	0	0	0	0	0	5.1		-			-	-	-
Highland City HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	183.6	211.65	147.05	108.8	88.4	10.2	0	0	749.7		-			750	262	262
Pleasant Grove City																											-			-	-	-
Provo Res. Co.															328	328	46	63	6	144	16				931		-			931	326	326
MWD																									0		-			-	-	-
Irrigation												26													26		-			26	9	9
Provo Bench																									0		-			-	-	-
Lindon City																											-			-	-	-
Provo Res. Co.															122	107									229		-			229	80	80
Lindon City												34					6								40		-			40	14	14
Provo Bench																									0		-			-	-	-
Provo Res. Co. - Alpine District	0	0	0	0	0	0	0	0	0	0	0	10.2	0	0	0	4.25	4.25	0	50.15	0	0	0	0	0	68.85		-			69	24	24
Lehi City																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	379.5	45.75	36	0	0	4.5	0	0	0	465.75		-			466	163	163
Lehi City	0	0	0	0	0	0	0	0	0	0	0	1.5	0	23.25	190.5	0	0	13.5	0	0	0	3	0	0	231.75		-			232	81	81
HCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84	42	56.25	0	50.25	0	0	0	232.5		-			233	81	81
Lehi Irrigation																											-			-	-	-
Provo Res. Co.	0	0	0	0	0	0	0	0	0	0	0	1.5	0	0	0	71.25	0	67.5	62.25	0	0	0	0	0	202.5		-			203	71	71
American Fork City																											-			-	-	-
Provo Res. Co.																		28	95		24				147		-			147	51	51
MWD																			12	92					104		-			104	36	36
HCD																					144	24			168		-			168	59	59
Highland Con. Dist Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28.9	165.75	250.75	239.7	158.95	41.65	0	0	885.7		-			886	310	310
MWD of SL & S Penstock	0	0	0	0	0	0	0	0	0	0	0	1091.4	1076.4	0	1077	0	1076.4	0	1077	0	1077	0	861.6	0	7336.8		-			7,337	2,568	2,568
																									17,233	**2,191**	**1,753**	**904**	**453**	**11,824**	**4,138**	**6,344**

Return Flow Percentage 2017 **37%**

Notes:

1. M&I flows estimate as indoor usage from Nov thru April
2. Summer usage from May thru October based on recent State of Utah study showing combined return flows of 60.8%

2017 Water Year

With State Engineer Proposed Values

Month	EOM Elevation (feet below compromise)	EOM Surface area w/ PRP Water (acres)	EOM Surface area w/o PRP Water (acres)	Incremental Increase in Surface Area (acres)	square inches	Incremental Evaporation Coeffecient (inches)	Incremental Evaporation (acre-feet)	Potable Deliveries (80%) (acre-feet)	M&I Deliveries (50%) (acre-feet)	Irrigation (35%) (acre-feet)	Total Return Flow (acre-feet)	Less Incremental Evaporation	Previous Month Total Surface Area (acres)	Previous Month Total Volume (acre-ft)	Previous Month Total Volume w/o PRP Water (acre-ft)	Total Surface Area of Previous Month Water w/o PRP Water (acres)	Net Area of PRP Water (acres)	Evaporation for Double Counted Area (acre-ft)	Cumulative Return Flow Volume in Utah Lake (acre-ft)
November	-6.73	74,247	74,220	27	171,507,827	2.8	6.38	572.80			572.80	566.42							11,110.91
December	-6.25	75,937	75,929	8	49,918,891	1.14	0.76	172.80			172.80	172.04	75,937	327,687	316,576	75,088	848	81	**11,202.39**
January	-5.59	78,199	78,177	22	136,028,192	0.77	1.39	501.60			501.60	500.21	78,199	381,451	370,249	77,524	675	43	**11,659.29**
February	-4.81	80,792	80,763	29	183,497,532	0.72	1.76	723.20			723.20	721.44	80,792	444,930	433,270	80,202	591	35	**12,345.29**
March	-4.29	82,479	82,448	30	190,242,851	0.85	2.15	779.20			779.20	777.05	82,479	485,678	473,333	81,816	662	47	**13,075.42**
April	-3.55	84,823	84,777	47	293,536,396	1.47	5.73	854.40		407.61	1,262.01	1,256.28	84,823	548,303	535,228	84,196	627	77	**14,254.85**
May	-2.61	87,424	87,413	11	69,540,043	2.88	2.66		14.00	386.66	400.66	398.00	87,424	630,087	615,832	86,948	476	114	**14,538.60**
June	-2.7	87,207	87,181	26	160,972,829	4.03	8.62		20.00	912.63	932.63	924.01	87,207	621,367	606,828	86,702	505	170	**15,293.08**
July	-3.2	85,912	85,877	34	213,970,407	6.92	19.67		216.00	735.81	951.81	932.13	85,912	578,129	562,836	85,217	695	401	**15,824.65**
August	-3.77	84,132	84,097	35	218,129,541	9.33	27.04		105.50	819.33	924.83	897.80	84,132	531,428	515,603	83,455	677	526	**16,196.32**
September	-4.18	82,831	82,805	26	162,747,956	8.3	17.95		96.50	574.68	671.18	653.24	82,831	493,926	477,730	81,990	841	582	**16,267.67**
October*	-4.1	83,086	83,075	12	72,385,269	5.19	4.99		-	301.56	301.56	296.57	83,086	502,201	485,934	82,312	774	335	**16,229.54**
								3,604.00	452.00	4,138.28	8,194.28	**8,095.19**						**2,410**

*Estimated ut lake elevation

1 acre =
6,272,640
square inches

1 cubic inch =
1.33E-08
acre-feet

GARY R. HERBERT
Governor
SPENCER J. COX
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Water Rights
KENT L. JONES
State Engineer Division Director

May 10, 2018

Jeff Budge, P.E.
Operations and Engineering Manager
Provo River Water Users Association
285 West 1100 North
Pleasant Grove, UT 84062

RE: Import and Return Flow Quantification in Utah Lake

Dear Jeff:

We received your letter of April 10, 2018 regarding quantification of return flow accumulated in Utah Lake from import sources. The purpose of this letter is to address quantification of return flows that have accumulated up to this point. Prospective quantification of return flows will be addressed in a future Order of the State Engineer in the active administrative process initiated under Water Right Number 55-262.

Irrigation Return Flow

You have requested an irrigation return flow percentage of 35%. This quantity has been or is currently being used in similar quantification methodologies. For the purposes of quantifying water that has presently accumulated in Utah Lake a 35% return flow can be used. However, this number is based on historical irrigation practices and conveyance facilities and we have concerns that this may no longer be an accurate number based on current operations.

Municipal Return Flow

You have requested a municipal return flow percentage of 90%. The standard return flow percentage used by the state engineer is 80% absent a municipality-specific study showing a different amount. For presently accumulated Utah Lake return flow, credit can be given for 80% of municipal water used.

Mixed-Use Return Flows

The state engineer has evaluated the last ten years of water use in Provo and Orem Cities and believes a mixed use return of 50% can be used for presently accumulated return flow in Utah Lake. This analysis assumes 80% return flow from indoor use and 35% return flow from irrigation. As noted earlier, however, the state engineer is concerned that current operations result in a smaller amount of irrigation return flow, particularly when used in cities for lawns and gardens.

1594 West North Temple, Suite 220, PO Box 146300, Salt Lake City, UT 84114-6300
telephone (801) 538-7240 • facsimile (801) 538-7467 • TTY (801) 538-7458 • *www.waterrights.utah.gov*

Geographic Differences in Return Flow to Utah Lake

Most of the irrigation return flow in question is considered to be directly tributary to Utah Lake. However, return flow in the most northern part of the valley including west of the Jordan River is considered to be partially tributary to Utah Lake and partially tributary to the Jordan River. Return flow to the Jordan River can be considered a return flow credit in Utah Lake if it returns to the Jordan River during the irrigation season since it reduces the demand on storage in Utah Lake. It is assumed that return flow to the Jordan River returns through the groundwater system essentially uniformly throughout the entire year, meaning that half would be available during the irrigation season. The amount of return flow that can be credited to Utah Lake also varies depending on the proximity of the conveyance works and irrigated land to Utah Lake and the Jordan River, particularly when accounting for the groundwater and surface water gradients. The following geographic coefficients are considered to be reasonable based on the factors described above.

Provo	1.0
Orem	1.0
Lindon	1.0
Pleasant Grove	1.0
American Fork	1.0
Highland	0.85
Alpine	0.85
Lehi	0.75
West of Jordan River	0.6

Evaporation From Utah Lake

For the purposes of water currently accumulated in Utah Lake the evaporation can be quantified using the modified Blaney-Criddle method and calibrated coefficients (k values) described in Research Report #145[1] for the Utah Lake Lehi Station. However, the state engineer is concerned that this method under-represents the actual amount of evaporation occurring, particularly at the edges of the lake.

Effective Date

Any return flow credits existing or potentially existing in Utah Lake up until April 9, 2012 would have spilled out. As of April 10, 2012 Utah Lake has been at or below compromise and return flows have accrued since that time subject to evaporation and exchange.

Request For Updated Quantification

Your letter identifies a total of 31,310 acre-feet of accumulated return flow in Utah Lake based on the method you have proposed. We request you submit a modified quantification of return flow accumulated in Utah Lake based on the guidelines in this letter. Please provide sufficient detail showing location the water was used, return flow calculations, evaporation calculations

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[1] Utah Agricultural Experiment Station Research Report #145, Consumptive Use of Irrigated Crops in Utah, p. 344-345, Robert W. Hill, 1994.

based on the incremental increase in area, the water already exchanged, and any other information that will help us to evaluate your quantification. I should reiterate that this quantification method applies to return flows that have currently accumulated in Utah Lake since April 10, 2012. Quantification of future return flows will be addressed in the pending administrative action initiated under Water Right Number 55-262. If you have any questions, please contact Jared Manning, Assistant State Engineer.

Sincerely,

Kent Jones, P.E.
Utah State Engineer

cc:

John Larsen
Utah Lake Commissioner
2399 East 10265 South
Sandy, UT 84092